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The Possibilities and Dangers of Artificial Insemination

DISCUSSION BY THE CENTRAL VETERINARY SOCIETY*

Mr. Geo. N. Gould (Southampton)†: The livestock policy of the Ministry of Agriculture underwent a number of changes in the war years, the ultimate effects of which can probably never be assessed owing to lack of statistics and records and the comparatively short period of time during which these changes of policy have been manifest. The outbreak of war was followed by the waiving of the provisions of the Bull Licensing Act which provided for an inspection by the Ministry's Livestock Officers, the bull being licensed provided it was true to type and of satisfactory conformation—no attention being paid to milk or butterfat records. This policy was dictated by expected lack of man-power and, it will be remembered, was vigorously opposed by the National Veterinary Medical Association. Subsequently the Bull Licensing Act was re-imposed, but during the period it was inoperative great potential damage could and must have ensued to a proportion of our future livestock from the use of less desirable and, in some instances, actually cross-bred bulls.

When attention is paid to the statistics of bulls licensed each year the possible extent of this retrograde step may be better assessed. It was followed by the order to cull within the herd in an effort to reduce the number of unproductive stock to consume the food that was available. While every attempt was made to utilize this act in a commonsense way, its good effects are difficult to estimate owing to variations in management and the well recognized influence of management on development and productivity. Its greatest benefit was probably where it was applied as a disease control measure. Later, after a period of intense preliminary propaganda, the Ministry announced their policy of herd improvement as an essential part of the system of alternate husbandry of the future. This was followed by instructions to the farmer that he must decide his breeding policy to which he should adhere and avoid repeated cross-breeding. Subsequently the system of bull licensing was changed and grades of licences became recognized—the higher grades demanding both pedigrees and records and the production records of the dam from which the bulls were bred.

Some insight into what is happening to-day is given if the figures of bull licences for Hampshire, with which I am conversant, are accepted as being indicative of the average of the country. There are 2,500 to 3,000 bulls licensed altogether, and each year about 1,200 to 1,500 of these are discarded and replaced by newly licensed young bulls; thus it would appear that the vast majority of bulls have a breeding life not exceeding two years. The number of cows and heifers requiring service in the county each year is about 80,000. These figures imply an average of one bull to each 30 head of stock. The shortage of good bulls of known milk and butterfat records has been accentuated by the extraordinary apathy of a not inconsiderable proportion of pedigree breeders in maintaining such records, and by the fact that few pedigree breeders appreciated the tremendous value of keeping a bull until it was proven and then continuing to breed from it. It must be remembered that the pedigree stock of this country totals only 3 per cent. of the cattle population, and it is to this stock, and this stock alone, that we must look for improvement in our non-pedigree stock. It is quite impossible to fulfil the demand for superior bulls of known pedigree and records to-day. This is reflected by the enormous prices paid even for young unproven bulls which have no guarantee of producing the improved progeny hoped for, and reflects still further the fact that the value of the older proven bull is still not fully appreciated. The services of the better and best bulls are, for the main part, restricted to the pedigree herds of which they are a part. This is dictated by economic factors.

In assessing the value of artificial insemination it is important to appreciate that its introduction is mainly concerned with the improvement of the commercial non-pedigree stock of the country. While there are doubtless many pedigree herds which could and would benefit from the use of the high-grade proven sires available at artificial insemination centres, it should be realized that from the point of view of providing out-crosses within the same breed in the future it would appear desirable for pedigree herds to continue to develop their own lines of breeding, provided steps are taken to maintain proper selection of both bulls retained for service and females to be bull breeders, that milk and butterfat records are kept, and that selection is based not only on physique and conformation generally but upon the type of udder and teats and regularity of breeding where contagious disease has not been a factor militating against it.

It will be obvious from these remarks that the pedigree breeders of the country have a very great part to play in the vast programme of herd improvement which must go forward if this country is to provide the improved stock and the increased amounts of foodstuffs of animal origin of which we are in so much need.

In my opinion there is a great future for the breeders of first-class pedigree stock and particularly for bulls coming up to the high standard demanded for artificial insemination centres. The lower grade bulls from pedigree herds will, I believe, be without a ready market within a measurable term of years, but the better bulls will still continue to be of high monetary value which should more than compensate for the loss—if in fact it is a real loss—and enable more discriminate selection to be made.

Artificial insemination makes it possible to provide the semen of better bulls for the largest number of stock in the shortest possible time at a price within the province of even the very small farmer. It will also enable a considerable number of inferior bulls to be dispensed with and a milk-producing cow or heifer kept in its place to the mutual advantage of the farmer concerned and the public demanding increased supplies of milk.

It must be emphasized that artificial insemination is carried out in accordance with thoroughly well-established physiological principles. When an individual reproduces it transmits to each offspring one, but not both, of the genes of each pair it possesses. Thus the parent gives to each offspring a sampling half of its own inheritance. The laws of chance govern this sampling subject to the restriction that each sample must contain one gene of every pair. This sampling nature of the process of inheritance allows a parent to transmit different inheritance to different offspring. Most parents are heterozygous for many pairs of genes; herein lies the explanation of the fact that identical pedigrees do not mean identical inheritance although they usually do mean a considerable degree of likeness. Cross-breeding between pedigree stock of different breeds and out-breeding within the breed tend to lower the breeding value of the individual by making it more heterozygous and by making selection among the cross-bred individuals more difficult. It promotes, however, individual merit because of the apparent general dominance of the genes favourable to size, vigour, fertility, etc. The offspring of cross-breds are more variable than the cross-breds were and generally average somewhat lower in individual merit. If both parents are cross-bred the offspring usually average below their pure-bred grandparents in individual merit. Improvements in heredity are permanent. The importance of environment, however, must be taken into account since environment may produce improvements which have their full effect only on the animals which are subjected to it. It is a truism to say that breeds were originally formed by more or less intense community breeding. Thus the application of artificial insemination on a wide scale in commercial stock gives promise, subject to the provision of first-class proven sires or of younger bulls which subsequently prove to be capable of effecting improvement in the progeny of the dams to which they are bred, of allowing an intense breeding programme tending to mass improvement of commercial stock in the shortest possible time. The improvement will be most manifest in the first generation and subsequently progress must be slower for obvious reasons and relates not only to type but to productivity.

It is essential that each centre should have a definite policy which, if necessary, should be imposed upon its members, the farmer choosing his breeding policy which must tend to the establishment of a breed or breeds in his herd and adhering to it. In my opinion this is one of the most important functions of an artificial insemination centre in view of the large number of stock which it will have the opportunity of influencing.

Such a policy will enable commercial breeders to adopt with ease a grading-up policy to pedigree standards, and it is possible, under such a system, to visualize a vast increase in the percentage of pedigree stock of the country in the future and subsequently the development,

* At the meeting held at the Conway Hall, London, W.C.1, on April 4th, 1946.

† Mr. Gould was unable to be present and, in his absence, his contribution was read by Dr. N. S. Barron.

by some of those whose stock has been graded up, of a breeding policy within the breed entailing out-crossing to different blood lines which they believe will effect improvement in their stock and which will tend to lead to the maintenance of an enhanced number of blood lines to prevent any criticism of the danger of too great a degree of in-breeding being substantiated. An essential part of grading up is the selection of the foundation cow. It would be true to say that starting with mongrel stock one or two generations may be necessary before the basic standard is achieved, but encouragement to grade up should be an important point in propaganda directed to herd improvement.

It is important to remember that the sire and the dam are of equal importance in inheritance, but that the sire has many more offspring in a single season, and in consequence is much more important than any one dam in determining the inheritance of the next generation in the herd, although not more important in determining the inheritance of any one animal: hence the common statement that the sire is half the herd and, in consequence, the obvious truth that the breeder can afford to spend more money to procure a desirable sire than to procure an equally desirable female. The breed as a whole, therefore, is influenced more by some of its males than by an equal number of females, but half of what the male transmits comes to him from his dam so that it may happen that a female has ultimately more influence on its breed through its male progeny than any contemporary male.

In assessing the improvement in progeny over their dam it is essential that due regard be paid to environment and management. The tendency of individual breeders to breed to type emphasizes the need for artificial insemination centres to choose their sires with due consideration to some reasonable degree of type with a view to avoiding criticism that the herds of the future within an area of an artificial insemination centre are likely to consist of a collection of different types from different sires. This emphasizes the need for representative local committees of management.

A further function of artificial insemination centres should be to stress in all their propaganda the importance of calf husbandry. Herd improvement inevitably requires the selection of females at the appropriate time with a view to producing the maximum benefit. No matter how well bred a bull may be it is always possible that he may not breed the improved progeny expected. Thus the only sound and progressive method of stock improvement is to base breeding procedure on the use, *as far as possible*, of good proven sires. While these are in short supply at the moment it is reasonable to assume that they will be more readily available in the next few years. *As an alternative* the sons of proven sires out of proven cows come next in order of merit. By a proven cow is meant one that is not only of good record and type but also one which has left progeny that are good producers and of equal or better type.

In these days of winter milk production artificial insemination has an enormous advantage over the ordinary use of the bull from one practical aspect. It is well recognized that bulls may be of varying fertility, particularly if used intensively over the comparatively short period of the winter months. This is especially so when labour is not available for efficient bull management. Artificial insemination provides semen of known viability and quality and its fertility can be quickly and readily assessed by the careful keeping and constant check of records and thus lead to more regular breeding in the herds making use of it. It is reasonable to assume that the bulls maintained at a centre will be of high fertility and will be maintained as such; that a careful check of all semen will be kept to ensure that as far as possible failure to conceive cannot be attributed to the bull; that management of the bulls, the collection of semen, the handling of the semen from the time it is taken, its dilution and storage and subsequent issue for use receives constant and skilled supervision. The importance of sterilization and drying of each and every part of the equipment cannot be over stressed, and the need for a system of bull hygiene is obvious. The technique of the inseminator must be skilled: the danger of implantation of disease organisms is a real one with faulty technique or inadequate sterilization. The part the veterinary surgeon has to play is a most important one. The danger of inefficiency leading to widespread interference with the breeding programme in an area must be recognized and accepted as the responsibility of the veterinary officer controlling the centre. It is necessary for all inseminators to adopt reasonable hygienic measures and measures of disinfection to guard against a possible spread of disease such as foot-and-mouth disease, trichomoniasis, *pyogenes* infection, etc. The danger of foot-and-mouth disease occurring at a centre suddenly stopping the supply of semen to a whole area is a real one and one which requires the early elaboration of a plan for co-operative action by other centres in such an eventuality.

There is considerable danger of artificial insemination being regarded as the "be all" and "end all" of sterility problems; this is a fallacy. It is, in my experience, true to say that breeding is more regular where artificial insemination is carried out with sound veterinary supervision than breeding by the use of the bull. The importance of this supervision emphasizes the need for the rapid development of adequate specialist veterinary services for this work.

Some of the minor dangers are the possibility of abortion being induced by the insemination of a cow or heifer already pregnant, particularly where intra-uterine insemination is practised as is usually the case nowadays. This has occurred and has been attributed to the following: (1) that the animal had shown oestrus, as they occasionally do although pregnant, (2) that the farmer had made a mistake in picking out the animal that was actually bulling. The danger became so manifest, in my experience, in cows apparently turning at four to five weeks that a rule was made that any cow turning at a period *beyond* three weeks was visited by the veterinary officer to enable him to ascertain by examination that the animal was actually in oestrus before insemination was carried out or to confirm pregnancy at periods over four and a half weeks where it existed. The need for taking full details at the time of telephone messages and the checking of records at the centre is indicated.

It has been suggested that there is a vague possibility that failure to exhibit oestrus or a tendency for delayed ovulation to ensue may occur in the future due to lack of the physical presence of a bull; I would not subscribe to such an opinion.

The alleged disadvantages of artificial insemination, apart from those arising from departure from the principles I have recorded, are usually based on ill-informed criticism the most pointed of which is the suggestion that it will have some unspecified harmful effect on the progeny in future generations. Its success in several countries for many years appears to discount this suggestion—even if any physiological reason existed. On the other hand it gives hope of stimulating the production of an even more superior grade of stock in the various breeds by the more careful selection which can be envisaged in the future on the part of pedigree breeders, and lead to the development of more breeders who will apply themselves to the mating of selected strains and families or the blending of strains to allow further improvement. Any abuse of the system in regard to pedigree stock would appear to be well covered by the stringent regulations of the breed societies.

Its great value in the control of venereal diseases has been confirmed, both in individual herds and in areas where its inception was due to the presence of these diseases.

The danger of the communal bull has been well recognized and artificial insemination has many obvious advantages in addition to the deterrent effect to the spread of disease, one of which is the provision of far superior sires than is possible under the Ministry Premium Bull Scheme.

Its benefits are not confined to small herds—the larger herd has to keep more than one bull, and in my experience artificial insemination has been accepted as an economic means of herd improvement in commercial herds ranging in numbers up to 1,000 cows—the latter being kept in 13 different units and requiring the services of more than 20 bulls.

It must be realized that the true genetic value of the dairy bull is not known until his daughters come into milk, which means his retention until the age of five years. There are few farmers who care to keep a bull to such an age on account of the difficulties of temperament and management, and, in addition, a bull which is in fact effecting improvement would be capable of producing at the most 30 to 40 calves a year, whereas with artificial insemination that number could be increased, depending upon the demand, to several hundreds. It will be readily accepted that all pedigree bulls are not necessarily bulls of great merit, many being indifferent from the breeding point of view. The time wasted in taking cows to the communal bull is another important factor to-day. A further advantage of artificial insemination is that it permits the safe use of heavy proven bulls on heifers.

The possibilities of artificial insemination in the future are that the specialist veterinary officers of the centres will be able to carry out fundamental clinical research on a wide scale, which will be a direct contribution to our knowledge of the physiological and disease processes associated with genetics. The mass of information of the physiological conditions met with at oestrus which should be available in the near future will do much to disprove or support various beliefs which are accepted to-day with alacrity. The significance of abnormal discharges—which have from time to time been suggested as being of no great importance and at other times as of extreme importance as a cause of infertility—can then be brought into its proper perspective. In my experience the discharging cow is an unlikely breeder; when she does conceive death of the embryo followed by return to oestrus at a varying period of weeks is common, or as an alternative, abortion of the foetus at a later date. Fertility and the carrying of a full-term foetus in such cases is, I believe, exceptional.

The possibility of some more definite evaluation of the merits or demerits of in-breeding and of line-breeding with a view to expediting

improvement in progeny will be possible over a large number of animals kept under diverse environmental conditions. True line-breeding—which implies the mating of animals so that their descendants will be closely related to some animal regarded as unusually desirable, by using for parents animals which are closely related to the admired ancestor but little if at all related to each other through any other ancestor—is in considerable vogue. It is a moderate form of in-breeding tending to conserve the good traits of an outstanding sire or dam, increasing their descendants in numbers with the minimum possible reduction in resemblance to the desired ancestor.

The need for bulls to be maintained at the highest degree of fertility in artificial insemination centres has already provided much information on more efficient bull management and nutrition. The supervision of the semen and its evaluation from the point of view of fertility can be expected to make great progress and to enable more accurate assessment of bull fertility in the future. The progress already made in wider dilution without marring fertility rate is a point of great interest and may tend to discount some beliefs previously held regarding the function of spermatozoa. The possibilities of improved methods of storage and prolongation of the viability of stored semen without adversely affecting its fertility hold out hopes of considerable advance. More satisfactory methods of transport of stored semen are likely to be devised.

The dangers so frequently expressed by critics of serious in-breeding being brought about by limitation of the number of sires n an area is more apparent than real. It has long been recognized by pedigree breeders that where improvement has been effected by a sire a reasonable degree of in-breeding or a policy of line-breeding has proved of immense value in fixing desirable qualities. The history of the building up of individual breeds gives emphasis to this belief and practice. A planned system of line-breeding using proven bulls exclusively would be unique and the expected effect should be expedition of herd improvement.

It must be realized that the number of stock for which artificial insemination is likely to cater will leave a large proportion of out-crosses within the breeds available from the pedigree breeders not partaking of the service and in addition by interchange of bulls between the centres.

It is, in my opinion, important that every centre should have a definite policy; that it should have the future continuously in mind; that its propaganda should be directed towards a breeding policy on the individual farm; to the encouragement of milk and butterfat recording; to improvement of management and feeding; to the careful keeping of breeding records; to scrupulous care in keeping insemination records and a correlation of provisional records with the calves ultimately produced to ensure accurate statistics; to improvement in calf husbandry and to the rational assessment of the improvement in the progeny of the system, due attention being paid to environmental changes (if any). These are all part of the intelligent practice of artificial insemination.

My remarks have been directed to the practice of artificial insemination in the dairy herds of this country and are based upon the belief that progeny records are a much greater factor than pedigree; that management is an all important factor in productivity and that good management implies disease control. In my opinion great care is required, as has already been evidenced in the introduction of European stock to tropical countries, and due regard must be paid to the improvement of the native stock, admittedly slower, by careful selection of sires and use of artificial insemination followed by selection of dams rather than the introduction of stock from a temperate climate unable to withstand the environmental conditions so successfully as native stock.

To sum up: In the absence of proven bulls of high fertility, of careful and intelligent bull management, of constant supervision of the whole of the administrative, technical and field work by the specialist veterinary officer of the centre, dangers can arise; but the advantages of artificial insemination in permitting rapid improvement in type and productivity of commercial stock on the widest possible scale are indisputable.

Mr. Joseph Edwards (Head, Dept. of Dairy Husbandry, Milk Marketing Board): Mr. Gould's paper is divided clearly into two parts—a consideration of breeding or livestock improvement problems and a consideration of technical problems, and I propose to organize my own remarks under these heads.

Breeding Policy

We have heard of the changes which the Government's attitude towards livestock policy underwent during the war. Whatever its early shortcomings it settled down to something really constructive and I think it is probably true to say that as a result of the first live-stock surveys the technique of A.I. was given its chance. It became clear not only that the need for improvement was great but also that it could not, in the sphere of cattle-breeding, be remedied by normal means. The numbers of good bulls needed to replace the bad ones simply were not available, and even if they had been it would have been economic folly to saddle many thousands of small farmers with the cost of keeping them.

It is, I think, important to realize that the carrying out of livestock policy has been, from the outset, decentralized. I doubt if the Ministry of Agriculture is any keener to "breed from Whitehall" than to "farm from Whitehall." If it were, I should think the former would be even more disastrous than the latter! But decentralization always means a sacrifice in the uniformity with which a policy is carried out, and I think it is true to say that not all War Agricultural Executive Committees have made equally good progress. In one county I know well every farmer with cattle has been visited and his stocking and breeding policy has been discussed on the farm. He has stated the breed of bull he intends to use and has agreed to notify his Committee if he proposes to make a change. An A.I. Society functioning in an area where this has been done has no difficulty. The only thing it may have to guard against is the risk that, not by compulsion but by persuasion, a member may have been influenced against his own judgment. In such a case it is up to the Society to see that the member gets what he wants. He can be expected to take a much greater interest in his cattle if he is looking after the breed he prefers.

Not all Committees have carried out this work as in the case I have quoted and not all members of an A.I. Society know what they want. In these cases a bigger responsibility falls on the A.I. Society. I do not like Mr. Gould's suggestion that the Society should "impose" a policy—I feel strongly that in a movement which depends so definitely on the co-operative spirit among members the less "direction" we have, either by the Society itself or by it acting in conjunction with the W.A.E.C., the better. This view is further strengthened by the fact that we must retain flexibility in our breeding methods; we have to admit that it is not only our commercial cattle which are at the cross-roads; our scientific knowledge of breeding policy is there too. We cannot afford to be too dogmatic. Most A.I. Societies safeguard themselves by having a rule by which they reserve the right to refuse insemination in cases where such insemination would not be in the best interests of livestock improvement. I think this is sufficient. At the present time it is too early to say if many, having made a first choice of breed for their first generation of A.I. stock, now wish to make a change to a second breed. This, if it occurred, would sound like the beginning of indiscriminate cross-breeding and would have to be watched carefully. Yet my personal view is that, if a member who wished to make such a change could give good and substantial reasons to the Society's Committee, he should be allowed to make it. We have to take a long view in breeding and who can say that if, for example, a regional or local change in milk requirements came about, it would not be desirable to breed to a different type of cattle in the area?

To come to some of the finer points of breeding policy: Mr. Gould has emphasized the importance of using progeny-tested sires and of line-breeding. He has said that "cross-breeding between breeds and within breeds tends to lower the breeding value of an individual." This may be true for show points (colour, *e.g.*), but I am not sure that, given the proper amount of milk recorded ancestry, it is true for milk and butterfat. As to crossing between breeds, I can quote the case of a noted American breeder who has recently introduced into his herd of Guernseys a proved bull whose sire was a Friesian and whose dam was a cross between a Jersey and a Red Dane. In this country we know of commercial milk-producers who cross-breed discriminately, *e.g.*, all heifers are bulled by an Ayrshire bull and all cows by a Friesian bull. As to crossing within breeds there is much evidence now to suggest that the crossing of inbred lines of a breed has much to commend it—that hybrid vigour is obtained—and I would say that this possibility, through artificial insemination, is a most hopeful one.

Mr. Gould has said rightly that in this matter of producing the best bulls for A.I. Societies the pedigree breeder has a most important part to play. I would say he never had a greater responsibility for, where in the past his bulls sired dozens of calves, they will now sire hundreds or thousands. We certainly look to the pedigree breeder to fix a type by in-breeding or line-breeding, but whether Societies should tie themselves to one line is another matter. It would be good to be able to improve uniformity of type at the same time as improvement of milk yield and butterfat was being effected. The risk of trying to do too much at once is the uncertainty of the bull supply from any given line. It might be possible to get an adequate supply of bulls in which the ancestors' names and the type of the bulls showed line-breeding, but it does not necessarily follow that all of these bulls would have the necessary *yield* qualifications. But the fact that some Societies will almost certainly want to follow a line-breeding policy will act as a stimulus to the breeders to whom they look for bulls.

I know that all A.I. Societies have been greatly concerned by two problems—the difficulty of getting adequate milk record information

on the pedigrees of the bulls in which they have been interested in buying, and the problem of getting progeny tests on the bulls they have used. You may have seen recently in the farming press an announcement of a new service to be organized in the Department of Dairy Husbandry at the Milk Marketing Board—the creation of a Bureau of Records. As you know, the Board now operates National Milk Records. We now propose, beginning October 1st, 1946, to organize these records for pedigree and progeny-testing purposes in a way which will help A.I. Societies considerably. I doubt if it will be desirable to test an A.I. bull on *all* his recorded daughters—as Mr. Gould has said, the factor of management for a milk record is most important. I still feel that the plan we aim at for Board A.I. Centres—the selection of certain officially recorded herds as "bull-proving" herds—is preferable. The performances of daughters in these herds can be used as yardsticks when it comes to advising others on feeding and management—and here I agree with Mr. Gould that the field for advisory work is wide open and most valuable.

Technical Problems

I now come to a consideration of technical problems. I think it is a good thing that in this country we have agreed on the principle of veterinary supervision of A.I. centres. In saying this I am aware of the facts that much of the early research and development work in this country has been carried out by workers in the field of animal production, that once the technique has been mastered the major job is one of livestock improvement and that in the United States and in Denmark entirely successful centres are operated by non-veterinary personnel. In this country we have a more complicated disease picture and this in itself is enough to justify the course we have adopted. But, if I may be permitted to say so, this claim to veterinary control brings with it responsibilities and here I would suggest the need for more widespread teaching in colleges of the physiology of reproduction (male and female fertility), endocrinology and the artificial insemination technique and also of the modern approach to dairy husbandry.

There is also the more ticklish problem of advice in sterility and disease control at centres. We know that at some centres in the United States and at practically all centres in Denmark a sterility service is given, either free or at an additional charge. There is no gainsaying the fact that the veterinarian in charge of an A.I. centre comes into very close touch with the breeding troubles of his members' herds. He has his herd histories in his office and he can see, almost at a glance, where trouble exists. At the present time the most he can do is to advise the member to call in his own veterinary surgeon and, possibly, to call in also the Ministry's Sterility Officer for consultation. I think that this co-operation is most desirable and I very much hope that all interested in curing sterility will make the fullest use of the breeding records at A.I. offices. But I am sure we want to avoid in the future the farmers' complaint so common in the past, *e.g.*, in the prosecution of clean milk production, that it took a number of "officials" to do one and the same job. I realize fully that this is a very thorny subject and I do not see that we can do a great deal about it at the moment. I hope that in time we may be able to compromise and that we may be able to avoid the situation now reported to be developing in Denmark—one where centres either have 100 per cent. veterinary staff and give sterility treatments or have no veterinary staff and confine their work entirely to inseminations.

There is one point here which requires more immediate attention. Mr. Gould has mentioned the risk of abortion following the insemination of a cow recently become pregnant. His plan for avoiding this risk—the insemination by the veterinary surgeon of all cows which return to service after three weeks—is one which might well be difficult to work at a large centre employing, say, one veterinarian and five to six inseminators. I would suggest that all inseminators should be trained in pregnancy diagnosis for their own use, *i.e.*, to enable them to avoid this type of accident. (I am not suggesting that they should carry out diagnosis over a whole herd.)

Although Mr. Gould has not mentioned the point specifically in his paper, I believe that he thinks that sub-centres ought, like main centres, to be under the control of a veterinary surgeon. If a sterility service were to be linked to the A.I. service I think this would be an admirable and very desirable plan; but for myself I doubt if a veterinary surgeon would be content for long to work at a sub-centre—away from the main centre with its bulls, facilities for study and office records—where his work was entirely that of routine insemination. Nor do I think that the expense of his higher salary could be justified.

I am sure that all veterinary surgeons in charge of A.I. centres will welcome Mr. Gould's endorsement of the material for clinical research which they have under their control. Among the problems which have been posed for detailed study I would put first what Mr. Gould has called the suitability of the cow for insemination. I have heard more than one veterinary surgeon say that his experience of artificial insemination has shaken the views which he had previously held on "breeding condition." Mr. Gould's experience that the discharging cow is an uncertain breeder—even although such cows may quite readily be got in calf—could be checked against breeding records. If the insemination of such cows does result in the death of the embryo or in an early abortion, then such an insemination is a waste of the centre's time. On the other hand, if a large number of them are successful, the delay for treatment before insemination is a waste of the farmer's time and money. Much can also be done on the study of fertility levels and service behaviour of bulls, for although a commercial A.I. centre cannot be expected to carry out fundamental research, the observations of an accurate observer made on animals under his control can be most valuable.

In addition to the obvious benefits of co-operation between livestock men and the veterinary profession in promoting this most important movement at and through A.I. centres, there remains, finally, the greater problem of the control of cattle diseases in general. There is little point in building up an organization to produce better calves if they, as they grow up, are to be culled ruthlessly by the diseases to which our cattle are now exposed. Any outstanding pedigree breeder will say that he was unable to build up a breeding herd until he got on top of disease. I do not want to get into an argument of the "which came first—hen or egg" type, but I feel certain that to gain the genetic advantages of artificial insemination we have to have a disease eradication programme going along with us, if not actually out in front.

General Discussion

Mr. D. N. Spriggs: He would like to support Mr. Gould in his assertion that one of the limitations of artificial insemination was the difficulty in spotting the bulling animals. It was extremely difficult with many cows and particularly so in a bunch of heifers in a field, when one or two were mounting each other, to spot which was bulling, if any. Another point had cropped up in the last few weeks and that was the possibility of insemination with sperm sent long distances (up to 250 miles) and whether it was a practicable proposition. He did have to use sperm sent a long distance the other day and the animal turned and he had to do it again. When a small quantity of semen, 3 c.c. or 4 c.c., was taken by car or train, particularly by car, it was shaken mechanically the whole time, and that appeared to put a strain on the semen unless it was of outstanding quality. He wondered whether it would be advisable in such instances to dilute the semen before transit.

Dr. Tom Hare said that the lucid and informative paper by Mr. Edwards reinforced the experience of the medical and veterinary professions, which conclusively proved that any instrumental intervention in the genital tract was a major surgical operation with all its attendant risks. Consequently he (Dr. Hare) supported Mr. Gould's contention that the artificial insemination of animals should be under veterinary supervision.

Dr. A. W. Stableforth: One question he would like to ask Dr. Edwards was regarding the collection of data on improvement of breeding by artificial insemination. He said he had taken certain selected herds in which conditions of management were good. One reason for that was obvious. He wondered whether it was not possible, however, that certain animals were of better stamina, vigour or quality, or the conditions such as to enable them to do better than others. Many breeders would not have these good conditions, etc., and he wondered if by selecting herds in that way Mr. Edwards was selecting animals or records which might lead to a policy not best fitted for the average herd. It was the average herd which needed to be graded up. On the question of sterility and A.I. centres and whether artificial insemination was better done by veterinary surgeons or anyone else, it was worthy of emphasis that the control of infertility was a veterinary job and that the best could be got out of this problem only when the backing of the records of an A.I. centre was available.

Dr. J. T. Edwards: He endorsed what Mr. Edwards so admirably put before them. Mr. Edwards hit the nail on the head when he said we must reorientate the outlook of veterinary surgeons. The problem of genetics was correlated with animal pathology and must be given full recognition in veterinary education. The background of training in future must be animal pathology, animal genetics, and animal nutrition. It had been said that the full value of the bull could not be assessed until the quality of his progeny could be proved, but this could not be ascertained until the bull was five years old. As he understood from superficial reading of genetics it was, however, necessary to cross the bull with his daughters to find out whether there was a hereditary trait. Lethal genes crept into species and their perpetuation must be prevented. There was a lesson in the experience with poultry. In the period since the last war when things were taken out of the hands of the old-time breeders and egg-laying trials were made the yardstick, the results nearly led to the extermination of several of the best breeds of birds.

Dr. J. McCunn: He wanted to cross swords with Mr. Edwards on one point. Mr. Edwards had said that the veterinary course in the colleges should be so altered as to produce specialists. He was not alone in that statement: it had been said all over the place by various people who specialized in one particular thing or another. At the veterinary colleges—and he had been on the staff of the Royal Veterinary College for 20 years—their job was to inculcate into the people who came there the "brass tacks" of a number of subjects and the subjects were many. It was impossible for them to become specialists in any particular subject. They were not expected to be botanists, chemists, physiologists, pathologists or any other type of specialist. They did, however, say that when these people had graduated they knew sufficient of the essentials of each subject which, when added together, made almost a composite sort of person—a veterinary surgeon. They knew a little about a lot and not a lot about a little. A specialist knew a lot about a little and if they followed Mr. Edwards's plan and gave them a physiology course sufficiently long to make them experts on the physiology of reproduction there would probably be no time left for them to know anything about how the heart works, how the gut works, how muscle works or how the joints function. Mr. Spriggs surprised him by not knowing that semen could be transported over many miles: Mr. Scorgie had despatched it from Reading to the Isle of Man with successful results. No doubt as time went on we would know how to send it to the Argentine. Now as to the disadvantages of artificial insemination. He had raised this point before. The success of the thoroughbred breeding industry in all animals and all classes of animals did not depend on the individual wonder animal—the Hyperion. Much of its prosperity came from the sale of the second, third or fourth class bulls or stallions. In a stud one could not expect to produce a Hyperion more than once in 100 years. If one could find some way of transporting "Hyperion" semen to the Argentine or India at a reasonable sum it was very

doubtful if people would come here to buy our second, third and fourth rate animals of good blood lines. If they did not do so he thought it would be a very serious thing for the thoroughbred breeding industry and even the canine industry.

Mr. H. Brassey Edwards briefly described the difficulty encountered in cattle breeding in East Africa. As the result of the research work of Dr. J Anderson a system of artificial insemination had been gradually introduced into Kenya Colony. He also referred to the difficulty of obtaining bulls of a proved type in Africa other than those animals imported from overseas.

Mr. Kelly referred to the optimum time after the onset of oestrus for insemination to be done. The intra-uterine injection of semen carried certain dangers. Pyogenic organisms could be demonstrated in semen as collected after storage at a temperature of 4° above freezing point, and amounting to 40,000 to 500,000 organisms per c.c. When contamination was gross the life of the spermatozoa was very short. The view was held that at the time of oestrus oestrine was at a high level and was a barrier against injection. Later this level became lower.

Mr. Kelly referred also to work in progress to find methods for collecting and keeping semen relatively free from contamination. It was hoped that with suitable technique semen could be kept for three weeks.

Mr. J. W. Bruford: In his area of West Kent they had some very good Ayrshire, Friesian, Jersey and Guernsey herds, and a large number of Shorthorn and cross-bred Shorthorn herds which were not so good. In these Shorthorn herds there was, in his opinion, very little chance of ever finding a bull to be of real value in the district. He felt it would be of great advantage to himself, and possibly to other people, to have access—particularly when advising farmers on a breeding policy—to the new bureau of records which could supply the veterinarian with information of farms where they could get bull calves likely to be of good breeding value. He deemed it useless to go on looking for good Shorthorn bulls in his district. It was not possible for many farmers of the district to go to the big sales and try to buy bulls of good breeding ability and milk records at present prices. Mr. Edwards had suggested that the veterinarian in charge of the A.I. centre was the only person who had records available to help in dealing with sterility in the herd. He thought he might say that many practitioners who were looking after large herds did keep very careful records. Particularly where the herd was T.T. the practitioner knew a lot about the herd and almost certainly more than the sterility officer stationed at an A.I. centre. Another thing which worried him about artificial insemination was the trouble about spotting oestrus in heifers and cows. He knew from experience that where bulls ran with the heifers there was a higher rate of fertility than in herds where the heifers were brought to the bull. He could not help feeling worried about the rate of fertility in a bunch of heifers controlled from A.I. centres. He would like some information on the points of bull management. He had been led to believe that it was not at all uncommon for a young bull to have a low rate of fertility for a month or so in the winter and he could not but feel it was something to do with bull management. As a practitioner he could not put his finger on the spot and could not explain it.

The Replies

Replying to the discussion, Dr. Barron said: The most salient thing was the correlation of artificial insemination to disease. Veterinary surgeons, though actively concerned in the eradication of disease in herds, realized the importance of improving and advising on health at the same time. Many specialized subjects were involved in the question, including dietetics and applied bacteriology and genetics. There should be facilities for specialist study on breeding diseases, possibly at the very end of the course at the veterinary colleges. The county survey of herds made during the war had brought to light a great deal of valuable information and it would be very useful to have these surveys continued so that we might have information of every herd regularly brought up to date. He agreed with Mr. Edwards that it was not fair to *force* a farmer to develop a particular policy but the policy adopted should be one agreed upon by the farmer and officer concerned. Those in charge of A.I. centres were well aware that in certain areas a particular policy was most suitable. Mr. Edwards spoke of crossing breeds. True there was more vigour in the first cross but the genetical picture became more confused as one went on, and he saw great difficulties unless great care was exercised. As to the advice on the disease situation, it was difficult to see who was best placed to give this, but in the long run collaboration between the practitioner and the head of the centre should provide the best results. In connection with bull management, we had learnt a lot since the various centres started. It was clear that the system under which the bull was kept might be responsible for infertility. The bull must obviously be trained and handled from calfhood so that he might be more manageable when he grew up. There was a tendency—in the right direction he thought—on the part of many farmers to tether their bulls out of doors. Many bulls had bad feet, so that when mounting they were liable to get grit and stones in the heels, and in some instances this had caused reluctance to mount. He had heard that at a certain period in winter bulls had a lowered fertility. If this was so he attributed it to bad management. If the bull was exercised and kept in condition his capacity to produce offspring would undoubtedly be increased.

Mr. Edwards: Mr. Spriggs asked about the long distance transport of semen. This first engaged the attention of Dr. Hammond at Cambridge in 1925 and he transported rabbit semen successfully from Cambridge to Edinburgh. The question of dilution was important. They had had perfectly satisfactory results with transporting it, but it had been diluted. They sometimes dealt with semen transported by a private organization and they had evidence of semen being sent out by private clients completely raw and dead. If semen was to be sent around the country it should certainly be properly diluted. As to Dr. Hare's point, he thought they might find pathologically that this question of discharge in cows and which to inseminate was important.

The case of "discharging" cows and their conception rates was one which ought to be studied as a piece of field research. The suitability of cows for breeding was not by any means easy to diagnose and the matter could only be studied by the resulting conception rates.

Professor McCunn did not like the word "specialist." He did not use it, but suggested that in early veterinary training there might be less emphasis on pathology and more on physiology and endocrinology, especially in relation to the reproductive organs. As to the records kept at an A.I. centre, he would not wish to say that they were better than those which some private practitioners kept for some of their clients. He would only suggest that in the case of members who used artificial insemination they were an extremely comprehensive record of the breeding condition of the herd and one which private practitioners might care to use when they were faced with sterility problems.

Weekly Wisdom

While a specialist can make judgments as to his own particular subject, it requires a man of all-round education to form competent judgments about things in general.—Aristotle.

Comparison between Intracervical and Intrauterine Methods of Artificial Insemination

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Introduction

In this country there has been recently some question as to which site of insemination is the most satisfactory for conception. Working in America Lasley & Bogart, 1943, came to the conclusion that the deposition of semen in the uterus gave more satisfactory results than when deposited in the cervical canal.

This work is an analysis of the records of insemination carried out from the Dartington Hall Artificial Insemination Centre in South Devon. The Centre operates over a radius of 15 miles and covers a cross-section of the cattle population of the area which is predominantly of the dual-purpose South Devon breed. The bulls used for the production of the semen were pedigree South Devons.

While the inseminations were being performed no consideration was given to the possibility of future publication of the results, so that the figures given relate to the normal day to day work at the Centre, there being no attempt made to arrange an experiment.

Technique

The intrauterine method of insemination corresponds to that described in the N.V.M.A. Publication No. V*, where the semen is deposited at the bifurcation of the uterine horns. In the intracervical method the semen was deposited in the cervix with the aid of a glass syringe and using a speculum (Anderson, 1945). In each case 0·75 ml. of diluted semen was inseminated. The intrauterine technique was performed by the author and the intracervical method by a lay inseminator.

The same samples of semen were used for both methods and each sample on collection showed "wave" motion. Collections were made with the long type of Russian artificial vagina. All samples were diluted with egg-yolk-phosphate buffer mixture (Lardy & Phillips, 1939). Dilution varied between the rates of 1 to 2 and 1 to 5 and diluted samples were not used over four days old.

Two bulls, each eleven years old, provided the semen required, each bull giving a collection every eighth day on the average. The average quantity given by Widland Lumpy was 10 ml. and by Mountbarton 11 ml. in each ejaculation. The average counts of sperms per ml. were 1,587 million and 1,626 million respectively. In all, 19 samples were taken from the first bull and 18 from the second. All samples in dilution were examined each morning for satisfactory motility before use. The cows inseminated were in various stages of oestrus though the great majority were in "mid" heat. There was no discrimination made as to which technique was to be used for any particular cow.

Table of Results

Name of bull	Month	Intracervical method: No. of 1st inseminations	Intracervical method: Per cent. conception	Intrauterine method: No. of 1st inseminations	Intrauterine method: Per cent. conception
Widland Lumpy	1944 Oct.	20	50·0	31	48·4
Mountbarton 3	1944 Oct.	26	53·8	43	67·4
Widland Lumpy	Nov.	26	30·8	33	66·6
Mountbarton 3	Nov.	48	35·4	50	64·0
Widland Lumpy	Dec.	68	20·6	71	57·1
Mountbarton 3	Dec.	19	26·3	8	37·5
Widland Lumpy	1945 Jan.	56	30·4	45	40·0
Mountbarton 3	1945 Jan.	29	34·5	29	51·7
Widland Lumpy	Feb.	45	35·6	32	59·4
Mountbarton 3	Feb.	40	37·5	32	40·6
Widland Lumpy	Oct.-Feb.	215	30·2	212	55·7
Mountbarton 3	Oct.-Feb.	162	37·7	162	56·8
Total both bulls	Oct.-Feb.	377	33·4	374	56·1

The conception figure is worked out as the percentage of cows which calved as the result of the first insemination.

(*Concluded at foot of next column.*)

THE VETERINARY RECORD
July 20th, 1946

PENICILLIN AND VETERINARY PRACTICE

LITTLE information is available on the use of penicillin in veterinary practice in this country. This is due to the fact that hitherto this drug has not been at the disposal of workers in veterinary science, except on a very small scale. Recently, the supplies were considered sufficiently good to enable penicillin to be made available for general medical practice and to be purchasable from pharmacists on the production of a medical prescription. The National Veterinary Medical Association was concerned at the decision of the Government not to extend similar facilities to the veterinary profession, and took the matter up vigorously with the Ministry of Agriculture and the Ministry of Supply. We are now glad to announce that arrangements have been made for the drug to be procurable by veterinary surgeons as from August 1st next, on application for the necessary form from the General Secretary of the Association. This extension of the Penicillin Order will greatly hasten the use of the drug in veterinary practice, although it must be emphasized that the concession has only been granted for the use of the drug in bovine practice.

Unfortunately, statements have been made by individuals unconnected with the profession claiming penicillin as the complete treatment for mastitis in dairy cattle. This claim is not borne out by the evidence of the research carried out under the direction of the Agricultural Research Council, nor is it the finding of those concerned in the clinical investigation being made under the auspices of the Veterinary Educational Trust. The results from both these groups of investigators indicate clearly that penicillin can be a most useful chemo-therapeutic agent in many cases of mastitis, particularly in streptococcal and staphylococcal mastitis. It must be emphasized that by no means all cases respond to this form of treatment, even when applied in the earliest stages. It is not yet possible to indicate with any accuracy the percentage of cures obtainable, but it is certain that it is not as high as was at one time hoped. Work with corynebacterial infection has not, as yet, proved to be promising. For the successful treatment of mastitis with penicillin, it is important to know the type of infection and a laboratory diagnosis should be made.

Many cases of streptococcal masitis will respond to treatment with either sulphonamides or penicillin, but in some instances, streptococcal infection will yield to sulphonamides and not to penicillin, whilst others react better to penicillin than to sulphonamides. Although many staphylococcal infections do not give way to penicillin administration, yet this form of treatment promises to be more effective than any other at present available. Experiments comparing infusion of the udder at 24-hour intervals with those at 12-hour or shorter intervals do not indicate significant differences, and hence the form of treatment recommended is the infusion of the udder with the necessary dosage of penicillin at 24-hour intervals for two or more days according to the progress of the case. The dosage recommended varies between 20,000 and 50,000 Oxford Units, although higher doses may prove of advantage in obstinate cases.

Research on other veterinary conditions has not been extensively recorded, but there are indications that penicillin can be successfully used in cases of metritis, peritonitis, and other streptococcal or staphylococcal infections in farm animals. The methods of administration in a particular case should be based upon a consideration of the nature of the disease, and may include all the methods utilized in human therapeutics.

It is of the utmost importance that every care should be taken to ensure that penicillin is stored and used under conditions which safeguard its potency. The drug is relatively unstable. It decomposes quickly if boiled in solution, less quickly if dissolved in hot water, or stored in solution at ordinary temperature. It will even decompose in the solid state unless it is stored at low temperatures. Although it will keep for some considerable time if adequately stoppered in sterile containers and stored at temperatures below 15° C., it is simplest to keep it in a domestic refrigerator. Under these conditions, a solution of the sodium or calcium salt will keep for several days. Even on one's rounds, it is advisable to keep the penicillin at as low a temperature as possible and to replace it in the refrigerator immediately upon one's return to the surgery. The method of the administration of the drug calls for strict asepsis, not only as a safeguard against the transference of disease from animal to animal, but also to ensure that the penicillin itself does not become contaminated with organisms capable of effecting its destruction.

Much further knowledge is required upon the use of penicillin in veterinary practice. A collection of this detailed information is likely to receive an impetus from the general release of penicillin to the practising members of the profession, and this journal can look forward to many interesting and helpful communications from its readers, particularly in these early stages of the release of this product.

The figures show that in each month and, with one exception, in each bull the conception rate for the intrauterine method is higher than that for the intracervical, the sum of the figures showing a difference of 22·7 per cent. conception in favour of the intrauterine technique.

Summary

An analysis of the records from a commercial artificial insemination centre shows a significantly higher conception rate from inseminations performed by the intrauterine technique than from those done by the speculum or intracervical method.

Acknowledgment.—The writer is indebted to Professor Dalling for his help and advice in the analysis of the figures.

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Penicillin Preparations of the British Pharmacopoeia

New Official Formulae

[We reproduce below, by courtesy of *The Pharmaceutical Journal*, the summary (given in the June 1st issue) of the official statement on B.P. penicillin preparations subsequently printed in full in the *London Gazette* for June 4th. These substances, therefore, now have the same status as other substances in the Pharmacopoeia and when penicillin preparations are ordered by the names appearing at the heads of the monographs the official substances must be supplied. Below are given details of the new monographs.]

PENICILLINUM
(Penicil.)
Penicilin

Penicillin is the anti-infective acid, produced when *Penicillium notatum* or related organisms are grown under appropriate conditions on or in a suitable culture medium, converted into the sodium or calcium salt. Non-specific impurities are removed as completely as possible, and the purified penicillin salt is dried under conditions designed to ensure the sterility and stability of the final product.

Description.—When pure, penicillin (sodium salt) is a white powder which may occur as granules or scales: it contains 1,666 units in 1 mgm. Penicillin (sodium salt) and penicillin (calcium salt) which have not been completely purified are pale yellow to light brown amorphous hygroscopic powders, containing not less than 300 units per milligram.

Solubility.—Very soluble in water. Insoluble in fixed oils, and in liquid paraffin.

Sterility.—A solution in sterilised water, after the addition of a quantity of sterile penicillinase or other suitable inactivating agent adequate to ensure complete inactivation of the penicillin present, complies with the tests for sterility.

[Tests follow for undue toxicity and pyrogens. In a new appendix (Appendix XV) details are given of the biological assay of penicillin by the cylinder-plate and broth dilution methods.]

Assay.—Determine the potency by the biological assay of penicillin and express it in units per milligram.

Storage.—Penicillin (sodium salt) and penicillin (calcium salt) are dispensed in sealed containers, the materials of which do not affect the potency of penicillin; they are kept at as low a temperature as possible, not exceeding 10°. Penicillin salts, especially the sodium salt, are hygroscopic and must be protected from the action of moist air.

Labelling.—The label on the container states (1) whether it is penicillin (sodium salt) or penicillin (calcium salt); (2) the total number of units in the container; (3) the minimum number of units per milligram of the Penicillin.

Doses.—The dose is determined by the physician in accordance with the needs of the patient.

INJECTIO PENICILLINI

(Inj. Penicil.)

Injection of Penicillin

Injection of penicillin is a sterile solution of penicillin (sodium salt) or penicillin (calcium salt) in physiological solution of sodium chloride. It is prepared by dissolving the contents of a sealed container in the requisite amount of physiological solution of sodium chloride using aseptic technique. When several doses of injection of penicillin are dispensed in a single container the solution contains 0·1 per cent. of chlorocresol.

Storage.—Injection of penicillin should be used within seven days after preparation and should be kept during this period at a temperature not exceeding 4°.

When injection of penicillin is prescribed, no strength being stated, an injection containing 20,000 units per mil shall be dispensed or supplied.* In the preparation of injection of penicillin, penicillin (sodium or calcium salt) containing not less than 900 units per mgm. is used.

INJECTIO PENICILLINI OLEOSA

(Inj. Penicil. Oleos.)

Oily Injection of Penicillin

Penicillin (calcium salt)	12,500,000 units
White beeswax	4·5 gm.
Arachis oil, sufficient to produce	100 mils

Melt the white beeswax in the arachis oil. Sterilise by heating at 150° for one hour, at the same time filter through coarse filter paper. Cool. Place the penicillin (calcium salt) in a sterilised mortar, and, using aseptic technique, triturate with a small quantity of the basis until smooth; then incorporate gradually the remainder of the basis. Distribute into sterilised containers and finally seal.

Storage.—Oily injection of penicillin should be stored in a cool place.

Labelling.—The label on the container states: (1) the name of the injection; (2) the strength stated as the number of units in a suitable dose-volume; (3) "For intramuscular use only."

Doses.—1 to 4 mils; 15 to 60 minims. 125,000 to 500,000 units.

Oily injection of penicillin should be warmed to blood heat for several minutes and well shaken before injection. In the preparation of oily injection of penicillin, penicillin (calcium salt) containing not less than 900 units per mgm. is used.

CREMOR PENICILLINI

(Crem. Penicil.)

Cream of Penicillin

Synonym.—Penicillin cream.

Penicillin (sodium salt) or Penicillin (calcium salt)	50,000 units
Emulsifying wax	7·0 gm.
Hard paraffin	5·0 gm.
Liquid paraffin	41·0 gm.
Chlorocresol	0·1 gm.
Distilled water, previously boiled and cooled	47·0 mils

Dissolve the chlorocresol with the aid of gentle heat in the distilled water which has been previously boiled and cooled. Cool the solution to about 60°. Melt together the emulsifying wax, the hard paraffin and the liquid paraffin with the aid of gentle heat. Transfer to a suitable container and cool to about 60°. Dissolve the penicillin (sodium or calcium salt) in the chlorocresol solution and add it to the warm basis in the container. Close the container, shake vigorously for a few minutes and then cool rapidly.

Storage.—Cream of penicillin should be freshly prepared as it loses potency on storage.

Emulsifying wax is a mixture of higher fatty alcohols and the sodium alkyl sulphates obtained from them. It is obtainable in commerce under the Trade Mark "Lanette" Wax SX. In preparing cream of penicillin, the proportions of hard paraffin and liquid paraffin may be varied, and yellow soft paraffin may be substituted, in order to produce a cream having suitable properties.

CREMOR PENICILLINI STERILISATUS

(Crem. Penicil. Sterilisat.)

Sterilised Cream of Penicillin

Synonym.—Sterilised Penicillin cream.

Penicillin (sodium salt) or Penicillin (calcium salt)	50,000 units
Emulsifying wax	7·0 gm.
Hard paraffin	5·0 gm.
Liquid paraffin	41·0 gm.
Sterilised water	47·0 mils

Melt together the emulsifying wax, the hard paraffin and the liquid paraffin with the aid of gentle heat. Transfer to a suitable container and add 37 mils of the sterilised water warmed to about 60°. Close the container and shake to emulsify. Place in an autoclave and heat to 115° for thirty minutes. Cool to about 60° and then add with aseptic precautions the penicillin (sodium or calcium salt) dissolved in 10 mils of the sterilised water. Close the container, shake vigorously and cool rapidly.

Storage.—Sterilised cream of penicillin loses potency on storage and should be freshly prepared. The finally sealed containers are not opened until the preparation is required for use. It is dispensed in containers providing sufficient cream for one application only.

Emulsifying wax is a mixture of higher fatty alcohols and the sodium alkyl sulphates obtained from them. It is obtainable in commerce under the Trade Mark, "Lanette" Wax SX. In preparing sterilised cream of penicillin the proportions of hard paraffin and liquid paraffin may be varied, and yellow soft paraffin may be substituted, in order to produce a cream having suitable properties.

OCULENTUM PENICILLINI

(Oculent. Penicil.)

Penicillin Ointment for the Eye

Penicillin (calcium salt)	100,000 units
Yellow soft paraffin	90 gm.
Wool fat	10 gm.

Melt together the yellow soft paraffin and the wool fat, filter while hot through coarse filter paper placed in a heated funnel, and sterilise the mixture by heating at 150° for one hour. Cool. Place the penicillin (calcium salt) in a sterilised mortar and triturate with a small quantity of the basis until smooth; then incorporate gradually the remainder of the basis. Distribute into small sterile collapsible tubes and close.

Storage.—Penicillin ointment for the eye should be stored in a cool place.

TROCHISCUS PENICILLINI

(Troch. Penicil.)

Lozenge of Penicillin

Lozenge of penicillin contains 500 units of penicillin (calcium salt). It is prepared by the compression of a mixture of penicillin (calcium salt) and previously prepared dry granules of sucrose or lactose or a mixture of the two and suitable binding agents. Each lozenge weighs about 1 gramme.

Storage.—Lozenges of penicillin are packed in suitable air-tight containers and should be stored in a cool place.

UNGUENTUM PENICILLINI

(Ung. Penicil.)

Ointment of Penicillin

Penicillin (calcium salt)	50,000 units
Ointment of wool alcohols	100 gm.

Heat the ointment of wool alcohols at 110° for one hour. Cool to room temperature. Triturate the penicillin (calcium salt) with a portion of the ointment of wool alcohols until smooth; gradually add the remainder, mixing thoroughly by trituration.

Storage.—Ointment of penicillin should be kept in a well-closed container, protected from moisture, and stored in a cool place.

[All the monographs carry the cautionary wording that if in any part of the British Empire the preparation is controlled by law, care must be taken that the provisions of the law are duly complied with.]

* This instruction has since been suspended until further notice.

Comments on the B.P. Preparations *

By

Professor H. BERRY, B.Sc., Ph.C., F.R.I.C., Dip. Bact. (Lond.)

The announcement that the British Pharmacopoeia is to include preparations of penicillin will be welcomed by all pharmacists because it brings a great increase of order out of a chaotic situation which has been allowed to develop too long. That there has been a spate of papers published in the professional journals both here, in America, and in the Dominions, testifies to the importance of the subject, while the decision of the Ministry of Supply to release penicillin to the general public on June 1st made that situation rather critical.

Increased Potency

The official formulae will probably come in for criticism, but, at least, we have got standards; the pharmacist will know what to dispense or supply. The potency of the preparations will be criticised; this is inevitable, because the clinician, now having the drug available in increasing quantities, is getting improved results with increased dosage, and also with the great advantage that penicillin is a drug whose toxicity limit has not been reached. Not only is there now a much greater supply of penicillin, but the purity of the substance is increasing. Some two years ago, a penicillin of about 200 units per mgm. was regarded as a great achievement; to-day potencies of 1,000–1,500 units per mgm. are available and the sodium salt can be supplied as a pure 100 per cent. white powder with a potency of 1,666 units per mgm. The calcium salt has not yet been made of this degree of purity. The deep-culture method of production is apparently responsible for the increased production and purity.

Lower Grade Material

The availability of purer products has now enabled the pharmacist to select his material. It will be noticed that the Pharmacopoeia restricts the use of penicillin for parenteral injections to a quality which is not less than 900 units per mgm. This is because the less pure forms have been known to cause reactions on injection, such as pyrexia and urticaria, due to impurities. The T.S.A. and the B.P. set a lower limit of 300 units per mgm. for penicillin. This limit is now a very low figure when compared with present standards. It has probably been set so that available stocks may be used up. Pharmacists should understand that this lower grade material is quite suitable for the preparation of creams, ointments, lozenges, spray solutions, etc., for topical use, and there is no reason why it should not be so used. The quantities issued in each vial by manufacturers will be standardised at 100,000, 200,000, 500,000 and 1,000,000 units (1,000,000 units equal one mega unit). These will be found to be useful quantities, but should the whole bulk from a vial be not used at once, an aqueous solution may be stored for seven days at 4° C., or a reserve stock of penicillin incorporated in soft paraffin or liquid paraffin will retain its potency at room temperature for several months. Thus a concentrated stock "triturate" of penicillin in an oily basis can be retained for dilution as circumstances require.

Stability

The question of the stability of penicillin is a matter of great importance to pharmacists, many of whom have gained the impression that it is material which is very susceptible to heat. This was probably true when penicillin was impure, but increasing purity has led to greater thermostability. The B.P. gives an opinion on thermostability by stating that aqueous solutions may be stored for seven days at 4° C. while the dry powder in the sealed container should be stored at as low a temperature as possible not exceeding 15° C. Both these are probably conservative statements. When penicillin is dispensed in an oily anhydrous medium its stability is probably that of the dry penicillin, and, for that reason, other things being equal, the pharmacist would do well to persuade the doctor to prescribe these oily preparations, particularly the ointment.

Effects of Moisture

Water, especially if acid or alkaline, is the chief factor which will cause anxiety, whether as moisture that gets into an opened container which has to be re-sealed, or aqueous preparations such as injections or emulsion-creams. Water not only inactivates penicillin, but it provides a medium (which oils and fats do not) for the growth of those penicillin-resistant organisms which produce penicillinase. While the sodium salt and the calcium salt are therapeutically interchangeable, the former is extremely hygroscopic and must be handled with care. For this reason the calcium salt is mainly preferred to anhydrous preparations.

Sterilised Penicillin Cream

It will be noted that the Pharmacopoeia specifies two creams—sterilised penicillin cream, and penicillin cream. The only difference is that the former is sterilised, and does not contain chlorocresol, and the latter is not sterilised and contains chlorocresol. The argument here is that sterilised penicillin cream is intended for the treatment of large superficial wounds and burns, and because penicillin is selective in its bactericidal action, certain organisms (*a*) which produce penicillinase and inactivate the penicillin, (*b*) which are of a pathogenic type such as *Ps. pyocyanea* may develop. Therefore when it is applied to a wound such a cream must be sterile, but if the cream gets infected, there is no bacteriostatic present capable of inhibiting these organisms.

Many pharmacists have included chlorocresol or phenoxetol for this purpose. Such creams have been largely used, although a certain school of thought has deprecated the practice of adding this type of antiseptic to penicillin for application to wounds. The lack of protection means that the sterilised cream must be packed in containers holding sufficient for one application and the cream should be applied aseptically by trained persons and not by the patient. In other words it is only suitable for use in hospital practice.

Penicillin Cream

Penicillin cream which contains chlorocresol is designed to produce a preparation which can be handed to the patient and applied by him. The chlorocresol will prevent any development of penicillinase, but it does not, of course, prevent the slower decomposition caused by the presence of water. Since it is primarily designed for the treatment of skin infections—and one ventures to state that it will be the preparation mainly demanded from the pharmacist in retail practice—the question of the sterility of the preparation does not arise. One would also assume that it is a preparation which is quite suitable for application to minor wounds. If the pharmacist is in doubt whether "sterilised penicillin cream" or "penicillin cream" is required, the question to be answered is: "Is it going to be applied by the patient?" If the answer is that it is, then the doctor cannot have been wanting asepsis and the cream is a safer preparation in the patient's hands than the sterilised cream which contains no protective bacteriostatic.

Ointment of Penicillin

Because both creams contain water, the question of storage arises. The Pharmacopoeia requires them to be freshly prepared; it would be well to regard their life as one week. This information should be passed on to the patient who should be warned to store the cream in a cool place. The ointment of penicillin, however, being made with an anhydrous base, and with the added precaution of getting rid of any contained moisture by heating the base to 110° C. for one hour, should be stable at room temperature for six to nine months. It is quite effective in the treatment of skin infections and it would be well if the doctor could be induced to prescribe this stable preparation in preference to the unstable cream for this purpose, unless a fatty base is contraindicated in treatment, as in the case of lesions of the acne type.

Oily Injection

The oily injection is the attempt to produce an injectable preparation of penicillin which has a reservoir action so that the interval between doses may be prolonged, or, as an ideal, only a single dose would be required. It is doubtful if the latter perfection has been reached and we await some form of penicillin that in its solubility is akin to alum precipitated toxoids. The basis of arachis oil and white beeswax has been chosen instead of ethyl oleate and white beeswax, although the latter is easier to manipulate in the syringe. Presumably this is because the oil provides a better reservoir action than the ethyl oleate. The oily injection follows a type in the Pharmacopoeia such as injection of bismuth salicylate or injection of calomel.

No question of penicillinase or water inactivation arises, so that its stability will be high. It could be stored for several months and it is probable that, for the majority of pharmacists in retail practice, it will be obtained from the manufacturer although there is no reason why it should not be prepared if proper provision be made.

The Pharmacopoeia specifies the calcium salt with a potency of not less than 900 units per mgm. for this preparation. Apart from the reaction which lower-grade penicillin might give on injection, the larger bulk of low-grade material required would produce a preparation which was too viscous for use.

Oculentum

The oculentum follows the usual type in the Pharmacopoeia except that water is omitted. This will give a preparation which should also be stable, and because of the insolubility of the penicillin in the base and its rapid rate of solution in water, there should be no anxiety as to the efficacy of the preparation.

* Also reproduced by courtesy of *The Pharmaceutical Journal* and with the author's sanction.

Lozenges

The lozenges of penicillin invite little comment. If they are prepared along the lines of the official method, then little inactivation of the penicillin will have occurred during manufacture and the finished tablets should be reasonably stable during storage if they are kept in air-tight containers and free from moisture. The patient should be instructed to suck, not to chew, the lozenges.

Injection of Penicillin

It is the dispensing of the injection of penicillin in the shop which will cause the chief anxiety. The injection is unstable and generally it is unlikely that it could be purchased. Its official life is seven days in a refrigerator or ice box. Because it involves the transference of sterile penicillin to sterile saline or *vice versa*, it involves skilled aseptic technique and equipment. This at once raises again, but in a more acute form, the question of the dispensing of sterile preparations in a retail establishment. The problem will not, or should not, arise in a hospital, particularly in the near future when the State should provide all the necessary facilities.

The dispensing of parenteral injections can be divided into two types :—

(1) In which the medicament is placed in an ampoule or bottle the container finally sealed, and sterilisation effected by the heating. If the official directions for time and temperature are followed, the margin of safety is very high, nor does one want to worry unduly about aseptic technique.

(2) Here one sterilises a solution by filtration, and then transfers the sterile filtrate to a sterile container and then finally seals, or an already sterile medicament is dissolved in a sterile liquid and the solution then transferred to a sterile container and finally sealed. In both there is the risk of contamination after the injection has been sterilised ; therefore the operator must use a strictly aseptic technique. This will involve not only skilled handling and sterile apparatus, but air-conditioning of room or cabinet in which the preparation is made.

That the T.S.A. requires a licence to be obtained for this type of operation is a measure of official anxiety on the matter. Two things may happen if a non-sterile injection is dispensed. The organisms may produce penicillinase in the water and cause inactivation of the penicillin or the organisms themselves may cause trouble on injection. The extreme case would probably be if the injection were used intrathecally. The organisms need not be highly pathogenic to cause a meningitis. Indeed, there are already two recorded cases of fatal meningitis due to *Ps. pyocyanea* following injection of penicillin. Moreover, no antiseptic is permitted in an intrathecal injection and this still further increases the risk. The intrathecal injection is the extreme case, and it is more than likely that the risk is immeasurably less with intravenous or intramuscular injections. Nevertheless, the pharmacist is responsible that the preparation is sterile.

I would say that if a pharmacist has not received adequate training in aseptic technique, he should not accept the responsibility—certainly not for intrathecal injections. I do not regard attendance at a short course of instruction as at all adequate for the man who previously had not even the experience of preparing what I have called type (1) preparations. It will, however, be a great blow to the prestige of pharmacy if this service to the general practitioner cannot be given. Even before the new National Health Service comes into operation we should like to know that the pharmacist in the shop can give the same professional help and guidance to the general practitioner as the hospital pharmacist does to his medical colleagues.

The risk and the licence can, of course, be avoided if the pharmacist supplies the doctor with a sealed vial of penicillin together with a sealed bottle of sterile saline and leaves the preparation of the injection to the practitioner if he is willing to do it.

One wonders what the future holds for penicillin therapy as practised on the general public. Will it be abused because of lack of appreciation of the factors underlying the treatment as was the case with sulphonamides ? The position of the sulphonamides and that of penicillin are very much the same ; trouble can arise from underdosage with both drugs. One can only urge the pharmacist to make himself thoroughly familiar with penicillin therapy so that he will be in a position to advise the practitioner on the correct use of the preparations. After all, that is his function.

Impressed with the turn-out of horses at Northampton L.M.S. annual domestic parade on June 27th, Mr. Berwyn Jones, London district veterinary surgeon to the L.M.S., decided to present a challenge cup to be competed for annually, the cup to be retained by any winner three times in succession.

CLINICAL COMMUNICATIONS*

Hermaphrodism

Mr. S. F. J. Hodgman opened a discussion on hermaphrodism by recalling that, at the last meeting of the Society, he brought a Sealyham pup (hermaphrodite) for their examination. He had since operated for the removal of the penis. In doing so, he was rather amazed to find that the urethra lay along the top of the penis but external to it. He had some difficulty in separating it from the penis before amputating the latter. In reply to Dr. W. R. Wooldridge, he suspected that it had one testicle and one ovary.

Miss Hernaman-Johnson related that about ten years ago she had a spaniel dog which suffered from great frequency of micturition, and was very bad tempered. The owners had the animal destroyed and on *post-mortem* examination she discovered that the animal had no bladder, but the urine was passing direct into a rudimentary uterus, and thence into the penis. The animal, she believed, had ovaries and no testicles: externally it appeared entirely male. The case was reported in *The Veterinary Record* about ten years ago.

Dr. J. McCunn: Malformations of the genitalia were not uncommon. The other day he came across a photograph of one he saw in 1921 with a penis five and a half inches long. It was a mongrel Fox terrier. Similar defects occurred in the horse. Mr. Hignett did a remarkable operation last year on a Clydesdale mare which was suffering from excoriation of the skin of the hind limbs due to soiling with urine. He found it was the ureter and not the urethra which was at fault. He implanted the abnormal ureter in the urinary bladder. How it was done he (Dr. McCunn) did not know, but the animal made a wonderful recovery and at a show at Ayr was first of its class.

There was a condition in mares in which the urethra opened anterior to its normal position. There was also a type in which the urethra passed upwards and backwards and opened on to the floor of the vagina. In these cases there was generally maldevelopment of the urethral muscle ; the animal had no control over the flow of urine and the stream fell on to the skin of the hind legs and caused scalding.

Malformations of the genitalia were not uncommon in mares. There was one type with a rather large clitoris and the mares acquired male characteristics. Sir Frederick Hobday operated in such a case at the College at an international veterinary conference. He entered the abdomen *via* the vagina and when the glands came out they were seen to be testicles.

Mr. W. A. Pool emphasized the need for tracing the pedigrees of these cases with abnormalities of the genitalia and placing the results on record, in order to build up a mass of data that would be of value for those doing research on the subject. It would be for the good of the breeds concerned for this information to be recorded, in order that hereditary characters might be recognized and affected strains avoided in breeding programmes.

Dr. McCunn said that Dr. Amoroso was interested in this subject ; as a result of enquiries from the British Goat Society, Mr. Arnold, of Reading, and Mr. Ottaway, were also interested, and they hoped to carry on further when specimens became available.

Mr. Hodgman stated that he had looked up the records in the library of the Wellcome Foundation and found records of only three hermaphrodites in dogs—recorded in America, Uganda and Germany. There were no records from this country at all.

Mr. D. D. Ogilvie stated that Camp, of America, did publish some work years ago on the factor of hermaphrodism in the pig. He had seen hermaphrodite pigs in Surrey ; there was a strong presumption that it was hereditary and it was limited to certain farms.

Mr. L. R. Geffen asked how the hereditary factor was transmitted and Dr. Wooldridge explained the functions of genes in the transmission of such characters.

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Ascites in the Cat

Major Hamilton Kirk showed a cat specimen, consisting of organs removed from the abdomen of a three-year-old cat with ascites, first seen a month previously. On the first occasion he drew off 15 oz. of a clear colourless transudate. It was tapped twice more and was destroyed the day previous to that meeting. Ammonium chloride and Salyrgan were given in the meantime but were not effective.

The cause of the ascites was apparently kidney disease but of which particular variety he did not know and there had not been

* Made to the meeting of the Central Veterinary Society held at the Conway Hall, London, W.C.1, May 2nd, 1946.

time for a histological examination. The liver had a nutmeg appearance the previous day which had partly disappeared. It was unusual for a domestic cat to contract cirrhosis of the liver; the yellow, fibrous-looking cortex of the kidney was very pronounced. From the appearance of the liver and kidney it was apparent that to have continued treatment would have been a waste of time. Had the ascites arisen from heart disease, valvular incompetency might have been expected and also cough and loss of breath. Had it been due to chronic peritonitis the aspirated fluid would have contained flaky particles of fibrin. Cirrhosis of the liver, or nephritis, or both, seemed to have been the causal factors in the case under discussion. The practitioner's greatest difficulty was in ascertaining the cause of illness, for upon that depended prognosis and the decision to carry on, or to sacrifice the animal.

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Dislocated Temporo-Mandibular Joint (Cat)

Miss J. O. Joshua said that the subject was a three-year-old spayed female cat, presented with a history of inability to close the mouth since the previous evening. Apparently this was noticed while the cat was on an invalid's bed, having previously been perfectly normal both during and after its evening meal.

On examination it was found that the lower jaw was deflected, the left lower canine being in the centre of the upper incisor region and so preventing closing of the mouth. Flexion and extension were fairly normal and the only pain evinced was when a finger was pressed against the region of the affected joint from inside the mouth. She had never seen such a condition, so made only a tentative diagnosis of luxation. In view of the possibility of fracture of the vertical ramus being present but masked by the powerful masseter muscle, she decided to have the jaw radiographed before attempting reduction.

Mr. Knight, of the Royal Veterinary College, kindly X-rayed the cat and read the radiograph for her, diagnosing articular dislocation of the left temporo-mandibular joint.

Reduction was attempted under nembutal anaesthesia and achieved quite easily, reduction being accompanied by an extremely loud "click" considering the size of the joint.

Two points of interest were:—

1. Absence of trauma, suggesting that the cause was merely over-extension during a yawn, as was seen in the human subject.

2. The very marked click accompanying reduction. Shock was far more marked than in reduction of luxated hip in dogs, and the depth of anaesthesia was increased to an alarming degree for some 30 minutes, after which recovery was unusually rapid.

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Neoplasm from Thorax (Cat)

Miss Joshua, reporting on this case, said that the subject was a castrated male cat, approximately six years old.

The history was that there had been gradual loss of flesh for the previous six months, with variable appetite, occasional cough and vomiting. On specific enquiry the owner admitted that respiration had been slightly laboured, but this was not the most prominent symptom.

The cat was destroyed and on *post-mortem* examination the thorax was found to be almost filled by a tumour mass, together with some clear, serous fluid. Heart and lungs were displaced posteriorly and upwards into the roof of the thorax. When removed the fresh specimen weighed 1 lb. 2 oz.

Sections, and later the whole specimen, were submitted to the Royal Veterinary College, the following reports being received:—

From Mr. E. Cotchin:—

Tumour specimen from the anterior mediastinum of the six-year-old c.m. cat. The lesion is a flattened ovoid structure, 12 × 6 × 6 cm., with a slightly bosselated surface, and lymphoid appearance on cross-section. An origin from the thymus is indicated by the frozen section, which shows a rough division into cortex and medulla: the tumour cells are present in masses supported by fine vascular trabeculae: the cortex shows small lymphoid cells, the medulla shows large lymphoid cells. No Hassall's corpuscles, however.

From Dr. E. G. White:—

The connective tissue capsule surrounding the tumour tissue is invaded by neoplastic cells and the latter are of two entirely different types. 1. Small round cells, exactly like lymphocytes. 2. Large cells with indistinct cell boundaries and pale staining ovoid nuclei—probably reticular or endothelial cells. It seems that Type 2 forms the basic structure of the tissue and in some areas it alone is present, but elsewhere Type 1 is present to a very varying extent and in some places so as almost to obliterate all traces of the reticular cell. Mitoses were not seen and there was no sign of structures resembling Hassall's corpuscles. There are none the less distinct resemblances to thymus tissue and one would like to know the exact relation of the growth to the thoracic structures. It may well be a "thymoma" and certainly resembles some of the growths classified as this by Jackson at Onderstepoort. To give a diagnosis without having the whole growth and knowing its exact location is perhaps dangerous, so I will merely suggest it may be a neoplasm of the thymus, probably slowly growing but none the less malignant. If one had to abandon the idea of thymic origin a diagnosis of lymphosarcoma would probably be made.

ABSTRACT

[I.—Normal Hock Joint of the Fowl; II.—Perosis in Chicks. Bruce, H. M., *et al.* (1946.) *J. comp. Path.* **56**. 49-52; 53-62.]

I.—Ossification of the hock of the fowl takes place from two centres in the distal end of the tibiotarsus, and one centre in the proximal end of the tarsometatarsus, but these ossification centres, which are considered to correspond to the tarsal bones of mammals, do not exist as separate bones.

The development of the hock was studied by weekly radiographs of a small number of cockerels of one particular breed kept under restricted conditions; the age at which the various changes occur will vary with such factors as breed, rate of growth, and condition of housing, but the general course of development would be the same. In a five-weeks-old bird, radiographs showed the two proximal centres to be distinct from, but very close to, the ossifying tibia, while the single distal tarsal centre was lens-shaped and separated from the underlying metatarsals by a zone of uncalcified cartilage. After eight weeks, the medial upper tarsal centre increased in size relative to the lateral centre, which it approached. By the tenth week, these two centres had met, and the fused centres had begun to unite with the tibia. Fusion proceeded from the centre outwards, and by 12 to 14 weeks the tibiotarsus appeared as a single bone. The line of union with the tibia was quite dense at first, but gradually became fainter, and was not distinguishable by the twentieth week.

The formation of the tarsometatarsus occurred less rapidly. The lower tarsal centre increased in thickness and diameter, and became shaped to articulate with the tibiotarsus on the tarsus, and to join distally with the metatarsal bones. Fusion with the latter began from the centre, spreading outwards to become complete at about 20 weeks. The densely calcified line of fusion was still visible in radiographs at one year, but was not seen at two years. The three metatarsals had also fused at one year of age.

II.—In the assay of vitamin D_3 in cod-liver oil for poultry by Olsson's method, which involves measuring the distance as seen on a radiograph between the metatarsus and the distal tarsal ossification centre, it was found that occasional chicks showed swelling and bending of the upper end of the metatarsus, making it difficult or impossible to measure this distance. The condition was later identified as perosis, the affected chicks developing typical symptoms.

The incidence of perosis varied in different batches, a total of 107 cases being detected in 5,720 birds. The chicks were kept in brooders on standard diets, and the heavier birds seemed more prone to perosis. The cause of the condition was not determined, but there were indications later that manganese deficiency, and not choline deficiency, was concerned. The disease was not usually detected until the chicks were four to six weeks old, but definite cases were seen in chicks two days and eight days old respectively.

Radiographically, the earliest change noted was a swelling of the upper ends of the three components of the metatarsus and a more pronounced tapering downwards to their point of fusion. The swollen metatarsus was bent just below the upper end, and consequently the tendons passing over the distal end of the tibiotarsus might slip partially or completely from the condylar groove to the lateral or medial side of the hock; the tendons cannot slip from the upper end of the metatarsus, since the gastrocnemius tendon is firmly attached there, and the flexor tendons are enclosed within the hypotarsal groove and canal. The metatarsus became rotated by the slipped tendon, and the hock joint was greatly swollen. The union of the tarsal centres with the metatarsus or tibia did not appear to be delayed.

Histologically, there was relatively little to see, considering the gross macroscopic deformity. The changes were most marked at the upper end of the metatarsus, but were also seen at the lower end of the tibia, and to some extent in other bones. The cartilage tongues, normally long and regular, were shorter and more irregular in the affected bones, suggesting an abnormality of the process of cartilage formation and replacement. Osteoblasts were numerous in both normal and affected chicks, and this was reflected by the normal calcification present in the perotic bones, which were brittle and could not be bent manually.

Apart from the radiographic features, rickets was distinguished from perosis by the abundance of osteoid tissue, the paucity of calcified bone, and the fibrous character of the bone marrow. Perotic chicks on diets low in vitamin D showed coexistent rickets, and both conditions could be recognized in sections as well as radiographs of one and the same bird.

F. C.

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Delfosse, Miss M. M. (S)
Dunn, P. S.
Gronow, W. P.
Hammond, F. C.
Harries, J. A. J.
Hart, C. B.
Hirst, B. J. (M)
Jones, E. W. (M)
Kenney, Miss D. M. (S)
Leftwich, R. B. W.
Lewis, T. R. B. (M)
McCarthy, B. J.
Macqueen, J. M.
Mills, H. D.
Murray, M. D.
Parsons, W. G.
Pitman, K. J.
Ridley, Wm.
Roberts, H. E. (S)
Stafford, L. P.
Startup, F. G. (M)
Taylor, B. A.
Troughton, Miss S. E.
Tunney, T. F.
White, J. A.
Woodford, M. H.
Young, Michael
Salmon, W. M.

(M) denotes credit in Medicine.
(S) denotes credit in Surgery.

"U.S.A. DOGDOM GETTING FENCED IN"

Official documents arriving from the Dominion of Canada, the longtime restriction against dogs imposed by Great Britain, and the recent ruling of the Government of South Africa against the importation of American dogs ought to be signals for our growing dog-breeding industry to heed—signals that stalling against a common sense programme for the extermination of rabies, on the sentimental ground that the species *canis* is too near the borderline of the immortal creatures of the earth to be classed as livestock, has gone on too long. The attitude of dogdom towards rabies (obstructing its eradication) is the familiar pattern with which our livestock sanitarians have had to deal before. So, as on all past occasions, means will have to be found to convince the good folk of the canine circle that compromising with disease does not help the individual proprietor/proprietress, their industry, nor the popularity of dogs and that, certainly, being what it is, rabies is a disease the people may take a notion to manhandle.

IN PARLIAMENT

Colonial Development

In the House of Commons debate (July 9th) on the Colonial Vote, when the attendance was lamentably small, in view of the importance of the subject, Mr. George Hall, in his first review of colonial affairs since he became Colonial Secretary, first made clear the policy of the Government, which was development of the colonies and all their resources to enable their peoples to improve their economic and social conditions and, as soon as might be practicable, to attain responsible self-government. During the past twelve months, said Mr. Hall, there were very few colonies where there had not been constitutional changes of one kind or another, though a uniform rate of progress was impossible. For the three mainland East African territories proposals had been made which, he admitted, fell far short of federation or union and were designed solely to help those territories co-ordinate action. In Central Africa there was set up last year a Central African Council, covering Southern Rhodesia, Northern Rhodesia, and Nyasaland. The West African Council would have a permanent office in West Africa, and he had recently appointed Sir Gerald Creasy, a very able Assistant Under-Secretary of State in the Colonial Office, as its first Chief Secretary.

He found it difficult to exaggerate the importance he attached to international co-operation in colonial affairs, and he welcomed any move which could bring other democratic countries to a closer understanding of colonial peoples and problems. Out of the Anglo-American Caribbean Commission set up in March, 1942, a permanent advisory West Indian Conference had arisen which included members from all Caribbean dependencies of Britain, the United States, France, and the Netherlands. A conference was to be called in the near future for the purpose of setting up a regional organization, representing the United Kingdom, Australia, and New Zealand, for the South Pacific, to exchange information.

The Government announced in January their intention of placing our mandated territories in Africa—Tanganyika, Togoland, and the Cameroons—under the trusteeship system established in the United Nations Charter. They regarded it as a natural and inevitable step that the terms of our trust should now be revised and brought into harmony with the new international organization which had replaced the League of Nations. The proposed terms of trusteeship were designed to carry that process into effect. On the score of administration the proposed new arrangements would not entail any change.

Educational Measures

Mr. Hall then turned to the educational and economic needs of the colonies. He had been most anxious to encourage and assist an advance along the whole educational front in all the colonies, and in the ten-year programmes of development now being submitted education occupied an important place. Steps had been taken, in collaboration with the British universities, to implement the recommendations of the Asquith Commission, and the preliminary work of founding universities in West Africa and the West Indies had begun. He hoped soon to set up a Colonial University Grants Advisory Committee as recommended by that Commission.

Colonial Service Organization

The organization of the Colonial Service was last reviewed in 1929-30 by Lord Passfield, when the policy of unification was adopted. That policy aimed at widening the field of recruitment, providing a career not limited to any one territory, and facilitating the interchange of staff at all levels. Experience had endorsed the value of that policy. But the political and social development of the colonies had gone forward a good deal since then, and he was convinced that additional provision must now be made to enable the colonial peoples themselves to take their place in the staffing of their own public services. Accordingly, £1,000,000 had been allotted under the Colonial Development and Welfare Fund, to enable colonial candidates to acquire the basic qualifications for entry to the higher grades of the service, and £1,500,000 for giving selected candidates, whether recruited in the colonies, in the United Kingdom, or Dominions, the additional special training which they required in order to apply their special qualifications to colonial conditions. He had accepted the proposals of the report by a committee of university and Colonial Office people under the chairmanship of the Duke of Devonshire. The universities were being most co-operative, and he was hoping a start would be made with the new training schemes this autumn.

As regards the general structure of the Colonial Service, he had recently issued a White Paper, and only wanted to remind the House that each colony had and paid for its own public service. It was not, therefore, possible to have any rigid standard of uniformity of salaries and conditions. There were, however, some important general principles which affected all colonies. Perhaps the most important of these was that there should be the same basic pay for officers doing the same job, irrespective of colony, of race, or of domicile. That brought them, however, to economic problems and the ugly fact was that the majority of our colonial peoples were very poor, and we must face a speed-up in economic development.

Research projects figured predominantly among the central schemes for benefiting the colonies as a whole. The past year had, in fact, seen both the completion of the main structure of research organization, and a rapid growth in the number of research schemes started. The fruit of the years of planning and survey under the wise guidance and leadership of Lord Hailey, as Chairman of the Colonial Research Committee, was now beginning to be seen as more scientific personnel was released from war work. In all, 54 new research schemes were approved in the year 1945-46.

Colonial Economic and Development Council

Plans covering the next ten years were now reaching him from colonial governments. He had long felt that the organization on the economic, development and commercial side, both in the central office and in colonial administrations, was not sufficiently comprehensive and the connecting link between London and the colonies should be strengthened. That feeling had been confirmed by experience gained in the examination of the plans now submitted. He had decided to appoint a Colonial Economic and Development Council, with very wide terms of reference, to include members with wide and varied business experience to advise him on the whole field of colonial development and economic and commercial policy. The new Council would take over the work formerly being done by the Colonial Economic Advisory Committee. He hoped that some of them would continue to serve on the new Council. He would suggest to the Council that it should conduct its work through two committees, one dealing with development and the other with economic policy.

He had also decided to reorganize and strengthen that part of the Colonial Office which was concerned with the administration of the Colonial and Development and Welfare Act and with economic affairs generally.

The keystone of our policy for improving the wealth and well-being of our colonial peoples must be co-ordinated and steady progress along several lines of development, all of which interact one on the other, with the administration at the Colonial Office and the colonial governments each making their contribution in research, planning, men, money, and materials. Without great improvement in basic economic conditions few of the colonies could be expected to show substantial social or political progress.

Mr. Stanley said that in the next few years the greatest emphasis in colonial development should be on the social and economic side, where there was more leeway to make up than in providing the mere machinery of government. An urgent problem was the relationship of colonial territories to each other. The present inter-colonial isolation could not continue in the modern world. Fortunately, just when the problem was becoming acute, air transport broke down the old barriers of distance. In regard to Kenya, Tanganyika, and Uganda the economic arguments for some form of co-operation were stronger, perhaps, than anywhere else in the Empire, though the political difficulties were also more formidable.

He was only too glad to see any strengthening of the economic machinery in the Colonial Office, but he hoped that this development committee, while giving all the help and advice possible, was not going to attempt to do for 40 odd colonies work they should do for themselves, that was planning their own economic future. He favoured the development of secondary industries, but the future of the vast majority of these 60,000,000 people would depend on agriculture, and the agricultural problems facing the Colonial Empire were grave in the extreme. In regard to health, he was sure the Colonial Secretary would agree with him that in the colonial territories health was not necessarily synonymous with hospitals. He felt that there had been, in the past, much too much emphasis on curative medicine and not nearly enough on preventive medicine.

The Opposition, and indeed all, must wish well to the Colonial Secretary in his attempts to guide 60,000,000 people of all races, colours, and creeds to this goal of self-government within the

Empire, of higher standards, and higher social and cultural development. He did not believe that all this would weaken the ties of Empire, but if they acted quickly, generously, and wisely, they could not fail to strengthen them.

The General Debate

In the general debate, which ranged over a wide field, some Ministerial members gave signs of dissatisfaction with the rate of progress in colonial development and welfare.

Dr. Haden Guest said that the Colonial Secretary would realize, as all of them must realize, that the Colonial Development fund, although it appeared to be a large amount of money, was a very small amount when spread over all the colonies. In considering the development of our colonial resources, the first thing to do was to aim at making the colonies individually self-supporting and self-sufficient; that is to say, there should be soil surveys, geological surveys, forest surveys, and agricultural surveys in order to see that we really knew what the resources of the colonies were capable of becoming. He hoped that a large part of the money for development and welfare would be spent on research in those ways

Colonel Ponsonby, who said he had recently returned from East Africa, maintained that the future of Kenya, Uganda, and Tanganyika depended entirely on agriculture and on the work which was put into the soil. The great problem in Kenya was soil erosion. There were three types of civilization trying to grow up side by side, the European, the Indian, and the African. If these three faced the facts with courtesy, good will, and understanding there was no reason why the racial problem should not be solved.

Dr. Morgan said that he had not been convinced by the Secretary of State that the Labour Party were doing anything new in colonial affairs and development. Could they not realize that these people were capable of a great cultural and economic development and could not we help them to go forward to those ends?

Mr. Skinnard said that it was desirable that advance in measures of self-determination in the colonies should go along with measures for economic rehabilitation, but there did not seem to be a pattern of constitutional advance to which the various steps conformed.

Mr. Woods contended that throughout the colonies most of the population were victims of abject poverty, disease, and malnutrition. The principles which inspired the trade union and co-operative movements in this country should be applied in the colonies to develop self-help among the native peoples.

Colonel Mackeson felt that the problems of the colonies should be removed from the hurly-burly of party politics. We had a moral duty to raise the standard of living of the Colonial Empire, and by so doing we could raise the standard of living of our own country. Great markets could be raised in the Colonial Empire, and without exploitation we should get a reasonable share of those markets.

Mr. Rankin said that all sides of the House seemed to be agreed on the poverty of our colonial brethren, but he did not think all were agreed as to the cause of that poverty. The Minister had mentioned environment and education. Another reason was indicated by reports of commercial companies which revealed low wage rates paid to native labour.

Mr. Creech Jones, Parliamentary Secretary for the Colonies, said it was a great pity that the world did not as yet appreciate the positive and constructive nature of the Government's colonial policy. During the past year the Labour Administration had worked in colonial policy faithfully in accordance with the principles laid down in Labour policy. Reference had been made to trusteeship, and the Committee could be assured that it was the Government's determination that the interests of the inhabitants of the territories should be paramount in regard to the economic clauses. Substantial progress had been made in social policy. Courses had been arranged for the better understanding of food and diets, and a working unit would soon be sent out to West Africa for the purpose of studying these problems.

With regard to the proposed West African university (referred to by the Secretary of State in his speech), he would assure the Committee that there would be no departure from the basic principles of the Commission's recommendations and that further, for practical purposes, the Minority Report would be complied with, with the exception that, in the case of the Gold Coast, the territorial college might, if it so chose, do post-intermediate work. If it did that work it would be asked to do it without prejudice to the larger development to the university in Nigeria, and it would be done under the guidance of the inter-university council which had been set up in London. He thought that that compromise did not represent any surrender of principle of any substantial kind and that it should, to some extent, satisfy the aspirations of the Gold Coast; at least they were very hopeful that it would do so.

The Secretary of State had referred to the setting up of the Economic and Development Council. The purpose of the Council was to bring under review, not only commercial trade and financial policy, but development through the Colonial Empire; that is to say, not only would schemes under the Colonial Development and Welfare Act be brought under consideration, but also the relation of those schemes to the larger schemes of development inside the territories, and the region to which that territory belongs. There would not be an examination of projects piecemeal but an examination of the whole needs of the territory in terms of its social and economic development. That would involve a readjustment of the machinery inside the Colonial Office concerned with economic problems. The Government were conscious of the fundamental importance of securing the understanding and good will of the colonial peoples.

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Questions

Penicillin

Sir John Mellor asked the Minister of Supply when sufficient penicillin will be available to meet demand; and whether the Control of Penicillin (No. 1) Order, 1946, will then be revoked.

Mr. Wilmot: Supplies of penicillin are steadily increasing but it will not be possible for some time yet accurately to estimate the demand. I will certainly give careful consideration to the desirability of discontinuing control measures immediately it becomes apparent that supplies are adequate to meet an uncontrolled demand.

Sir J. Mellor asked the Minister of Supply why, under the Control of Penicillin (No. 1) Order, 1946, he has made anyone who, without approved prescription or authority, tries to buy penicillin, liable to imprisonment; and whether he will amend the Order so as to confine responsibility for infringement to vendors.

Mr. Wilmot: No, Sir. Control is more effective against possible black market activities if proceedings can be taken against the person who acquires as well as the supplier.

Sir J. Mellor: What steps is the Minister taking to inform prospective purchasers of the peril which they run?

Mr. Wilmot: Penicillin can only be bought against a prescription, and that is the safeguard on which we rely.

Sir J. Mellor: But what steps is the Minister taking to inform the general public of the contents of this Order under which a perfectly innocent purchaser runs the risk of going to prison?

Mr. Wilmot: I am indebted to the hon. Member for a further opportunity of making these facts known.

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Farm Buildings Committee (Report)

On Tuesday of last week Mr. Steele asked the Secretary of State for Scotland whether he is now in a position to make a statement regarding the Report of the Committee on Farm Buildings for Scotland.

Mr. Westwood: The Scottish Farm Buildings Committee, appointed in August, 1943, to consider and make recommendations regarding the layout, design, and construction of farm buildings after the war, reported to me last September. The report is to be published to-morrow. It contains a wealth of information and guidance, including plans and illustrations, for those about to embark on new or reconstructional work on farms.

There is no doubt that, if full agricultural production is to be secured, and maintained, farm buildings will require to be brought up to date. This will entail an extensive programme of rebuilding or modernization of existing buildings. The erection of farm buildings is subject to licensing by my right hon. Friend the Minister of Works, and plans for new buildings in Scotland are referred to the Department of Agriculture for Scotland for examination. The position, however, in regard to the supply of building labour and materials is still serious and some time must elapse before the accumulated arrears can be overtaken. Meantime, in considering plans for new work, every opportunity will be taken to ensure that the fullest productive use of available supplies is secured.

The report also contains recommendations which will require examination in conjunction with the recommendations put forward by the Farm Buildings Mission to the United States and Canada who were appointed by my predecessor and his colleague, the then Minister of Agriculture and Fisheries, and whose report was received last November. I am, in the first place, referring both reports to the Scottish Agricultural Advisory Council for their consideration.

I am also proposing to set up a permanent advisory committee to arrange for the collection, assessment and dissemination of information about farm buildings.

Colonial Service (Study Leave)

Sir G. Fox asked the Secretary of State for the Colonies what steps are being taken by his Department to bring technical and professional Government officials from East Africa into line with modern practice; and whether facilities are offered to Government officials to attend courses for this purpose in the United Kingdom, either during or on completion of their leave.

Mr. George Hall: Owing to the shortage of trained staff in the Colonial Service as a result of the very restricted recruitment during the war, it is not at present possible for Colonial Governments in East Africa and elsewhere to spare the services of many members of the professional and technical departments for extended periods of study leave. The hon. and gallant Member will, however, see from the report on Post-War Training for the Colonial Service which was published recently (Colonial No. 198 paragraph 6) that it is proposed to afford facilities for sabbatical or study leave to officers of both the administrative and professional branches of the service. This proposal will be implemented as soon as circumstances permit.

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Vivisection (Inspectors)

Mr. Challen asked the Secretary of State for the Home Department whether having regard to the recent disclosures about the conditions of animals at a research laboratory during the hearing of a cruelty case at a police court, he will take steps to ensure that, as soon as may be, all inspectors appointed by his Department under the Cruelty to Animals Act are qualified members of the veterinary profession and also that more regular inspections of research laboratories are made by such qualified inspectors.

Mr. Ede: I should be glad to consider candidates with veterinary profession and also that more regular inspections of research an inspector, and it is rare to find a candidate qualified in both professions. As respects the recent case at Oxford—which, I believe, is still *sub judice*—the premises had been visited in the previous month by a Home Office inspector before the outbreak of distemper which was mentioned in the proceedings.

Mr. Peter Freeman asked the Secretary of State for the Home Department what percentage of the inspectors appointed for the purpose of investigating the experiments by vivisection under the Cruelty to Animals Act, 1876, have previously held Certificate A permitting performance of experiments without anaesthetics; and whether he will consider appointing a nominee of the R.S.P.C.A. or other animal welfare society.

Mr. Ede: Of the three pre-war inspectors none had held licences or certificates. During the war one of these three died and the increase of work made it necessary to increase the staff from three to four. Two men were appointed during the war, each of whom had held a Certificate A, but neither had been doing experiments under the Act for 12 years or more. As the responsibility for the appointment of inspectors is placed by the Act on the Home Secretary, it would be wrong for me to undertake to accept nominations made by the R.S.P.C.A. or any other society.

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Feeding-Stuffs

Mr. Randall asked the Minister of Agriculture if he is aware that, arising from the announced 40 per cent. cut in feeding-stuffs, a cross section of farms on second-rate land, where the first half-gallon was waived, has been taken and produced an estimate that whereas last winter a farmer was eligible for 1,570 units, next winter only 305 will be drawn; and, in view of these figures, if he will consider reviewing the allocation of units as a matter of urgency.

Mr. T. Williams: I have not seen the estimate referred to. If my hon. Friend will let me have particulars I will write to him.

Mr. Randall asked the Minister of Agriculture if, in order to build up protein and cereal units for county reserves and for producers on second-rate land, he will give consideration to a scheme for next winter, whereby farmers on first-rate land shall only receive units up to requirements of sufficiency, or, alternatively, to raise the gallonage after maintenance.

Mr. T. Williams: The ability of a dairy farmer to become more self-sufficient in feeding-stuffs depends on a number of factors, of which the quality of the land is only one, and it would be administratively impracticable and probably unfair to operate a rationing scheme which was based only on the quality of land. If, however, my hon. Friend has any concrete proposals in mind and would let me have particulars, I should be happy to consider them.

Dog Foods

Sir P. Macdonald asked the Minister of Food whether, in connection with the introduction of a scheme for rationing bread and cereal products for human consumption, he will introduce a system of providing a small ration of biscuits made from surplus cereal products and meat offals for all dogs for which licences have been taken out, in order to ensure that they will not be subjected to hardship or fed on surplus foods which ought to be used for human consumption.

Mr. Strachey: No cereal products are surplus but I propose to continue to allocate limited quantities of stocks of flour unfit for human consumption and of animal protein to manufacturers of dog foods. I am afraid, however, that I cannot introduce a scheme for the rationing of dog foods as the difficulties are too great.

NOTES AND NEWS

Diary of Events

July 23rd.—Annual General Meeting of the Southern Counties Division, N.V.M.A., at Winchester. (See Notice.)

July 24th.—Summer Meeting of the Eastern Counties Division, N.V.M.A., at Cambridge (Institute of Animal Pathology), 11 a.m.

July 24th.—Meeting of the Western Counties Division, N.V.M.A., at Launceston (White Hart Hotel), 2 p.m.

July 25th.—Special Meeting of the Scottish Branch, N.V.M.A., at Edinburgh (The "Dick" College), 2.30 p.m.

July 26th.—Meeting of the Mid-West Division, N.V.M.A., at Sherborne, Dorset (Half-Moon Hotel), 2.30 p.m. (lunch 1 p.m.)

July 26th.—Meeting of the Royal Counties Division, N.V.M.A., at the Royal Veterinary College, Streatley, 11 a.m.

July 26th.—Meeting of the North Wales Division, N.V.M.A., at Bala (British Legion Hall), 2.30 p.m.

July 31st.—Joint Meeting of the Section of Comparative Medicine, (Royal Society of Medicine) and the Central Veterinary Society, at 1, Wimpole Street, W.1, 5 p.m.

Aug. 2nd.—Meeting of the Society of Veterinary Practitioners at Carmarthen (Dolwar Café), 2.30 p.m.

Aug. 7th and 8th.—Summer Meeting of the British Society of Animal Production, at Glasgow. (See Notice.)

Sept. 23rd-27th inclusive.—Annual Meeting and Conference of the National Veterinary Medical Association of Great Britain and Ireland, to be held in London.

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Penicillin Available Shortly for Use by Veterinary Surgeons in the Treatment of Bovine Mastitis and Other Diseases of Dairy Cattle

By arrangement with the Ministry of Supply and the Ministry of Agriculture and Fisheries, penicillin is shortly to be made available for use by veterinary surgeons in the treatment of bovine mastitis and other diseases of dairy cattle.

Veterinary surgeons wishing to obtain supplies during the period from August 1st, 1946, to October 31st, 1946, should apply to the GENERAL SECRETARY, NATIONAL VETERINARY MEDICAL ASSOCIATION, 36, GORDON SQUARE, LONDON, W.C.1, for the necessary application forms on which they will be asked to state the firm from which they wish to obtain their supplies of penicillin. These firms will, on approval of the application, be appropriately licensed under the Control of Penicillin (No. 1) Order, 1946, to effect supply.

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PERSONAL

Mr. J. R. Hayhurst's Retirement

Mr. J. R. Hayhurst retired from his duties under the Corporation of London on July 2nd, having completed nearly 34 years' service. After serving five years with the Blackburn Corporation as Veterinary Surgeon and Superintendent of the Cattle Market, Mr. Hayhurst was appointed Superintendent and Chief Veterinary Inspector of the Metropolitan Cattle Market by the Cattle Markets Committee of the Corporation of London in December, 1912. This Market covers an area of 32 acres and in peace-time 140 men were employed under the charge of the head of the department.

During Mr. Hayhurst's tenure of office at Islington the work of the Veterinary Inspector has greatly increased and under his advice considerable improvements to the premises have been carried out. In the 1920s the Weinberg Casting Pen for use in the slaughter of cattle by the Jewish method was introduced by the inventor and a very considerable amount of work in the development and demonstration of this apparatus was carried out at the Metropolitan Cattle Market where the work was greatly assisted by the advice of Mr. Hayhurst.

During the 1914-1918 war and at other times Mr. Hayhurst acted for the late Colonel Dunlop Young during his absence, as Veterinary Inspector for the City of London under the Diseases of Animals Acts, which includes the administrative duties under the contagious Diseases of Animals Acts for the City and also for the Port of London in respect of imported animals. When Colonel Dunlop Young returned from the war in 1919, Mr. Hayhurst retained a part of the duties and on Dunlop Young's retirement in April, 1934, Mr. Hayhurst was appointed Chief Veterinary Inspector for the City of London and first Mr. A. C. Lloyd and afterwards Mr. E. F. McCleery, the Assistant.

During Mr. Hayhurst's sojourn in London he has always taken a great interest in the Royal Sanitary Institute and during the whole of his career has been on the Board of Examiners for Inspectors of Meat and Other Foods. He was at one time the Chairman of the Board of Examiners and the Chairman of the Examination Committee, which dealt with many other subjects in addition to the above. He has always taken an intense interest in the annual congress of the Institute and always maintained that it is the duty of veterinarians to support the Veterinary Hygiene section. He was the recording secretary of this section for twelve consecutive years and President for one year. Mr. Hayhurst was also for some years the sole representative of the veterinary profession on the Council of the Royal Sanitary Institute and in those capacities he very ably maintained the importance and status of veterinary surgeons in public health work.

Very soon after his appointment by the Corporation of London Mr. Hayhurst had gained the confidence of both the Cattle Markets Committee and all the traders and this confidence has steadily increased throughout his tenure of office.

It may interest readers to know that a part of Mr. Hayhurst's responsibilities was the well-known Caledonian Market, held on Tuesdays and Fridays, which grew to be the largest market of its kind in the world, the stallholders numbering approximately 2,350.

Under the terms of his appointment Mr. Hayhurst gave a large number of lectures and demonstrations to various public bodies including the final year students of the Royal Veterinary College, the Royal Sanitary Institute, the Smithfield Institute and the Battersea Polytechnic, etc., etc.

All those concerned with his work and all who know him will wish Mr. Hayhurst many years of happy retirement.

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Mr. Hayhurst's Successor: Mr. E. F. McCleery, M.R.C.V.S., D.V.S.M.

At the meeting of the Court of Common Council held on June 27th last, Mr. Edward Forde McCleery was appointed as Clerk and Superintendent and Chief Veterinary Officer at the Metropolitan Cattle Market and Chief Veterinary Inspector for the City of London under the Diseases of Animals Acts in succession to Mr. J. R. Hayhurst.

Mr. E. F. McCleery, who qualified as M.R.C.V.S. in 1925 from the Royal Veterinary College, Dublin, obtained the Diploma in Veterinary State Medicine in 1927 at the Royal (Dick) Veterinary College, Edinburgh. He is also a Fellow of the Royal Sanitary Institute. Three years after qualifying, Mr. McCleery was appointed to the Leeds City Council as Assistant Veterinary Officer and Deputy Chief Veterinary Inspector under the Diseases of Animals Acts. His period of service under Colonel Dixon terminated in 1937, when he was selected from a large number of applicants for appointment as Assistant Veterinary Inspector at the Metropolitan Cattle Market and Assistant Veterinary Inspector for the City of London. His long experience of inspectorship service includes many years as a local Veterinary Inspector of the Ministry of Agriculture and Fisheries.

Mr. McCleery has rendered much helpful service in the corporate activities of the N.V.M.A. He acted as Hon. Secretary of the Yorks Veterinary Medical Association for some years and was local Secretary for the very successful N.V.M.A. Congress held at Scarborough in 1936. We extend our congratulations to him on his appointment and wish him every success in his widened sphere of responsibility.

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Births.—Douglas.—On July 4th, 1946, at Westminster Hospital, to Elizabeth (*née* Mennie), wife of S. W. Douglas, M.R.C.V.S., of the Royal Veterinary College, N.W.1, a son—John Francis.

Macgregor.—On July 6th, 1946, at Melling Nursing Home, to Mary Macgregor (*née* Byles), M.R.C.V.S., wife of Douglas Macgregor, B.Sc., M.R.C.V.S., Colonial Veterinary Service, Nigeria—a daughter.

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Marriage.—Leslie—Longstaff.—At Skipton Parish Church on June 14th, 1946, Victor J. S. Leslie, M.R.C.V.S., Skipton, to Jean Mackenzie Longstaff, Cowling.

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Illness of Major Brennan DeVine.—Our readers will learn with much regret that Major Brennan DeVine, who retired in March from his post as Chief Veterinary Officer to the City of Birmingham Veterinary Department, has for some time been seriously ill in hospital at Birmingham. We are relieved to be able to say, however, that Major DeVine is progressing favourably, though he has been advised that he will require a long period of convalescence.

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Governor of Wye College.—We are glad to learn that the University of London has for the first time appointed a veterinarian as one of its representatives on the Board of Governors of the well-known Agricultural College at Wye, Kent—the South-Eastern, where our colleague Dr. McEwen accomplished some of his best-known research work, on the diseases of sheep. The new Governor is Dr. W. R. Wooldridge, Past-President of the N.V.M.A., and now Scientific Director of the Veterinary Educational Trust.

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Dr. Réne Quétard, Vétérinaire, Ecouen (Seine et Oise), France, desires to spend a fortnight with an English colleague with a view to studying English methods and improving his knowledge of the language, on the understanding that his host would return the visit. Correspondents whose offers cannot be accepted would be put in touch with other French veterinary surgeons who desire to make English contacts.

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Faculty of Veterinary Science in University College, Dublin (a constituent College of the National University of Ireland)

A Faculty of Veterinary Science has recently been established in University College, Dublin (a constituent College of the National University of Ireland) and the following part-time appointments in connection therewith have been made by the Senate of the National University:—

Professor T. G. Browne, M.Sc., M.R.C.V.S.—Chair of Anatomy.
Professor J. A. Nicholson, M.A., PH.D., M.R.C.V.S.—Chair of Physiology, Biochemistry, Histology and Embryology.
Professor W. Kearney, M.R.C.V.S.—Chair of Pathology and Bacteriology.
Professor A. F. O'Dea, M.R.C.V.S., D.V.S.M.—Chair of Medicine and Meat Inspection.
Professor P. A. McGeady, M.R.C.V.S.—Chair of Surgery and Obstetrics.

The first meeting of the Faculty was held in the council chamber of University College, Dublin, on July 12th, 1946, when Professor A. W. Conway, President of University College, presided. On the motion of the President the Principal of the Dublin Veterinary College, Professor T. G. Browne, was unanimously elected first Dean of the Faculty.

This Faculty has established a veterinary course leading to a postgraduate degree (B.Sc.) in veterinary science in the National University of Ireland. Although this degree is a postgraduate one the course will include all the subjects of the present curriculum for the M.R.C.V.S. diploma and will be run concurrently with the course for that diploma in the Dublin Veterinary College for those students who are desirous of obtaining this degree.

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Trinity College, Dublin, Honours Professor T. G. Browne

At a meeting of the Senate of Trinity College, Dublin, on July 3rd, 1946, the degree of M.Sc. (*jure officii*) was conferred on Professor T. G. Browne, Principal of the Veterinary College, Dublin, in recognition of his activities in negotiating arrangements whereby students and graduates of the Dublin Veterinary College are enabled to obtain University degrees in veterinary science.

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Victoria Veterinary Benevolent Fund

In Appreciation of an Example

There are many ways in which members of the profession could assist the above Fund by collecting money *outside* its ranks and thus help to swell the small grants made to the 50 recipients on its books, and we record below a splendid example which many members of our profession could emulate with great benefit to the Victoria Veterinary Benevolent Fund.

A short while ago the town of Bexhill-on-Sea again held its horse show with very great success, the profits, which are devoted

to charities, amounting to £500. Mr. Arthur Whicher, M.R.C.V.S., of that town, has for many years been Chairman of the Show, but resigned the position this year. Doubtless the Committee wished to show their great appreciation of his long period of service, because at his request they have allocated the sum of £200 to the Victoria Veterinary Benevolent Fund.

It is the desire of Mr. Whicher and the Committee that this sum be not invested, but distributed in the form of a bonus from time to time to those receiving grants.

All those connected with the Fund wish to thank the town of Bexhill-on-Sea and Mr. Whicher for the generous gift, and in doing so express the sincere hope that many who read this will follow this lead and not only subscribe, but work for the benefit of this charity.

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R.C.V.S. OBITUARY

Conder, Gerald, D.S.O., Lt.-Col. late R.A.V.C. (R.O.), Middleton Cottage, Mead Lane, Bognor Regis. Graduated London, December 16th, 1896. Died July 10th, 1946; aged 76 years.

Ingersoll, Frederick Henry, 8, Lewisham Park, Lewisham, S.E.13. Graduated London, December 13th, 1898. Died June 26th, 1946.

Mr. F. H. Ingersoll, M.R.C.V.S.

We learn with deep regret that Mr. Frederick H. Ingersoll, who, as recorded in our issue of July 6th, was detained in Lewisham Hospital with a suspected fracture of the skull after having been found unconscious in the street, died the following day.

In due course after graduation Mr. Ingersoll succeeded to his father's practice in Lewisham, but had the unfortunate experience of seeing a busy practice seriously affected first by the evacuation and slaughter of animals and later by the "blitz." He then ran a clinic at the Old Dover Road, Blackheath, till it was bombed and had been helping at Eltham—both clinics being R.S.P.C.A. institutions—until his death. A severe illness in the winter left him unfit for strenuous work, but with characteristic devotion to duty he responded to a 4.30 a.m. call shortly before his death, when he still further undermined his strength by five hours' effort in extricating unharmed nine bullocks from a railway truck, the bottom of which had fallen out.

Amongst the many tributes paid to Mr. Ingersoll, that from Mr. S. G. Polhill, Acting Chief Secretary to the R.S.P.C.A., refers to his close association with the work of the Society and the skill and understanding displayed by him at all times, which earned the esteem and admiration of all who came into contact with him.

* * * * *

UNIVERSITY OF EDINBURGH DEGREES

At the University of Edinburgh Graduation Ceremonial on June 28th, the following former students of the Royal (Dick) Veterinary College had degrees conferred on them: The Degree of Doctor of Philosophy in the Faculty of Science (Ph.D.)—Samuel Geoffrey Wilson, B.Sc. (Edinburgh and Belfast), M.R.C.V.S.: Thesis, "Ticks and Tick-borne Diseases in Nyasaland"; The Degree of Bachelor of Science in the Department of Veterinary Science, B.Sc. (Vet. Sci.)—Henry John Steven, M.R.C.V.S.

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ADDRESSES OF DISEASE-INFECTED PREMISES

The list given below indicates, first, the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

Swine Fever:

Lincs. (*Lindsey*).—Bellwater Farm, Eastville, Boston, Lincs. (July 13th).

Northants.—2, East Cottages, Brafield, Northampton (July 13th).

Southants.—"Homedene," Durley, Southampton (July 8th).

Warwicks.—17, Greaves Cottages, Stockton, Rugby, Warwickshire (July 8th).

Worcs.—Church House Farm, Shelsley Beauchamp, Worcestershire (July 11th).

* * * * *

Not so long ago, as such things are computed, animal industry in the U.S.A. found itself in a position similar to that now facing dog breeders and owners, and for one reason and one reason only: Foreign countries barred the importation of our food animals and their products on account of disease hazards. Something had to be done. So, the Bureau of Animal Industry was established and the veterinary service of this country started on its long record of accomplishments in livestock sanitation and disease control. Right then our animal industry also began to mount.

Americans don't like to be fenced in and, if dog fanciers find themselves thus restricted to-day because of rabies, the "scientific facts necessary [for concerted action on control] are known." The report of the Sub-committee on Rabies of the National Research Council, published in the May *Journal*, contains them.—*J.A.V.M.A.*

IMPORTANCE OF THE VETERINARY PROFESSION IN RELATION TO NUTRITIONAL NEEDS

Professor F. A. E. Crew, presiding at the annual prize distribution in the Royal (Dick) Veterinary College, Edinburgh, on July 3rd, emphasized the point that there would be a greater need than ever for the application of veterinary science to social affairs.

Professor Crew made a reference to the setting up of the Food and Agriculture Organization, and said that food of the desired kind and in sufficient quantity could be provided only if, guarding the world stocks of domesticated animals from disease and abuse, there was an efficient veterinary service. For many years yet the number of the animals that provided many of the essential ingredients of our dietary would be grossly insufficient. Our own were to be deliberately reduced. Therefore, those that remained must become doubly and trebly precious. If we as a people were to thrive, these in our own country, as elsewhere, must be kept free from disease and must receive the best of husbandry.

The medals won by students in 1946 were presented by Professor Crew. Professor Matheson, Acting-Principal, gave a brief review of the activities of the College during the war years. Many academic honours had been won by students, and in particular the Walley Memorial Prize and the first Fitzwygram Prize, both open to students in Great Britain, had been won by Mr. George Duncan, a student of the College.

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DISSEMINATION OF SCIENTIFIC INFORMATION TO THE PUBLIC

A conference held on Monday of last week at the Royal Institution, states *The Times*, initiated a plan to make closer contact between, on the one hand, science and scientists, and, on the other, the Press, broadcasting, television, the films, and all other publicizing agencies.

"It is intended to establish, as a function of the British Association, a central institute or bureau of scientific information, endowed partly from public and partly from independent sources, which would keep records of all scientific research and answer questions, put newspapers and other enquirers into touch with scientists who can speak with authority on their subjects, and circulate official information about new developments in science, pure or applied.

"The conference was arranged by the British Association—whose president, Sir Richard Gregory, took the chair—in collaboration with the Royal Society. It adopted a resolution, moved by Sir Edward Salisbury, Director of the Royal Botanic Gardens, Kew, and seconded by Sir Henry Dale, O.M., requesting the council of the British Association, in consultation with other appropriate authorities and bodies, 'to consider the need for improved methods of disseminating scientific information to the public through a closer liaison between science and publicizing media, and to take steps to establish a central organization for that purpose.'

"The many contributions to the discussion revealed a general recognition at once of the increased and increasing public interest in science and of the responsibility imposed on scientists to meet the public wish for information."

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LEGAL NOTES

Freezing-Point Test: A Quashed Conviction

In a case in which a Milngavie milk producer was successful in having had quashed by the Justiciary Appeal Court in Edinburgh a conviction in Glasgow for adulteration of milk, based on evidence relating to the Hortvet (freezing point) test, Lord Justice General Normand, in giving judgment for the farmer, said (reports the *Farming News*):—

"The Stipendiary Magistrate says of the evidence adduced for the appellant that it was in all respects satisfactory and that he believed that none of the witnesses had tampered with the milk. Why then did he not acquit?

"To answer this I must now revert to the finding which deals with the Hortvet test. It is found that the freezing point depression of the milk was —0·508° C. It was also found that the basis of the freezing point (Hortvet) test is that genuine milk has a freezing point which varies within very narrow limits, that the average freezing point figure for genuine milk is —0·540° C.; and that if water is added to milk, this figure is reduced and approaches to zero or 0° C., which is the freezing point of water. It is also found that a freezing point depression of appreciably less than —0·530° C. would indicate the presence of water added to the milk.

"Now the Stipendiary said, after having declared that he believed the witnesses for the appellant, that, having regard to the evidence led by the respondent, the result of the analysis and the result of the freezing point (Hortvet) test, 'I was satisfied that the alleged milk was not genuine milk, and that water had been added to the

milk after it had left the cows and before it was sold, and that the evidence led by the appellant had not countered successfully the evidence of adulteration tendered by the respondent.'

"The two passages in the Stated Case, the first expressing belief of the witnesses of the appellant, and the other holding the offence proved, cannot be reconciled. . . .

"What Counsel needed for his argument was a finding that a freezing point depression of appreciably less than —0·530° C. is conclusive of adulteration by the addition of water to the milk, and I cannot read the facts stated by the Stipendiary as amounting to that.

"In my opinion, therefore, the facts as found fall short of establishing a conclusive test; and the Stipendiary having believed the evidence for the appellant in rebuttal of the analyst's evidence, ought to have acquitted. . . . The appellant is entitled to have this conviction quashed."

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SCHEME FOR THE CONTROL OF DISEASES OF DAIRY CATTLE

STATEMENT SHOWING THE NUMBER OF UNDERTAKINGS NOTIFIED TO THE MINISTRY OF AGRICULTURE DURING THE MONTH ENDED JUNE 30TH, 1946

County	Undertakings Notified		Total Undertakings		
	During Month	Previously	Number	Number of Cattle	
				Cows	Heifers
ENGLAND					
Bedford	—	34	34	773	431
Berks	—	85	85	3,124	2,050
Bucks	—	80	80	2,730	1,470
Cambridge	—	10	10	190	79
Chester	—	324	324	10,770	4,260
Cornwall	—	4	4	72	75
Cumberland	—	57	57	1,454	1,226
Derby	5	317	322	9,143	5,188
Devon	—	309	309	4,562	2,650
Dorset	—	66	66	2,078	1,124
Durham	1	254	255	5,469	2,325
Essex	1	206	207	6,938	4,276
Gloucester	—	95	95	2,541	1,821
Hampshire	5	360	365	10,538	7,082
Hereford	—	12	12	297	164
Hertford	—	80	80	2,362	1,554
Hunts	—	7	7	280	168
Isle of Ely	—	1	1	57	21
Isle of Wight	—	4	4	52	39
Kent	1	155	156	3,649	2,213
Lancs	—	168	168	4,918	1,864
Leics	—	100	100	2,511	1,915
Lincs (Holland)	—	3	3	25	11
Lincs (Kesteven)	—	23	23	321	192
Lincs (Lindsey)	—	102	102	1,975	1,196
Middlesex	—	13	13	419	219
Norfolk	—	132	132	4,272	3,017
Northants	—	72	72	2,129	1,812
Northumberland	1	51	52	1,620	1,153
Notts	—	163	163	3,601	2,238
Oxford	—	43	43	1,214	1,916
Rutland	—	8	8	156	107
Salop	2	220	222	6,446	3,436
Soke of Peterborough	—	—	—	—	—
Somerset	4	255	259	6,783	3,241
Staffs	3	174	177	4,386	3,556
Suffolk, E.	—	56	56	1,233	857
Suffolk, W.	—	48	48	1,010	744
Surrey	—	94	94	2,743	1,317
Sussex, E.	2	162	164	4,120	2,603
Sussex, W.	—	107	107	3,073	1,757
Warwick	—	121	121	2,741	1,940
Westmorland	—	8	8	198	191
Wilts	—	84	84	3,458	1,471
Worcester	2	148	150	2,895	1,544
Yorks, E.R.	1	94	95	1,671	906
Yorks, N.R.	1	110	111	3,394	243
Yorks, W.R.	—	238	238	5,788	2,339
WALES					
Anglesey	—	49	49	843	600
Brecon	—	12	12	244	129
Caernarvon	—	111	111	1,768	974
Cardigan	—	37	37	679	447
Carmarthen	2	232	234	4,374	2,312
Denbigh	—	30	30	617	299
Flint	—	44	44	1,002	566
Glamorgan	—	92	92	1,487	659
Merioneth	—	10	10	137	65
Monmouth	—	53	53	1 241	688
Montgomery	—	14	14	283	248
Pembroke	—	40	40	845	707
Radnor	—	—	—	—	—
TOTALS	31	5,981	6,012	153,649	87,695

Notes.—(1) Operative periods of undertakings: 1 year, 1,595; 2 years, 401; 3 years, 4, 16. (2) Undertakings renewed for further periods: 1 year, 1,98 1; 2 years, 226; 3 years, 782. (3) Undertakings not renewed at ends of operative period, 1,9 8. (4) The figures showing the number of undertakings notified during the month, relate to entirely fresh undertakings and do not include undertakings renewed for further periods. Undertakings which have been cancelled or not renewed are not included in the figures for previous notifications.

County	Undertakings Notified		Total Undertakings		
	During Month	Previously	Number	Number of Cattle	
				Cows	Heifers
SCOTLAND					
Aberdeen	—	19	19	959	448
Angus	—	17	17	654	428
Argyll	—	2	2	33	74
Ayr	—	15	15	475	280
Banff	—	1	1	129	29
Berwick	—	1	1	20	—
Bute	—	—	—	—	—
Caithness	—	—	—	—	—
Clackmannan	—	5	5	191	114
Dumfries	—	11	11	579	556
Dunbarton	—	1	1	60	40
East Lothian	—	1	1	20	8
Fife	—	25	25	904	516
Inverness	—	2	2	106	46
Kincardine	—	3	3	97	63
Kinross	—	3	3	62	43
Kirkcudbright	—	9	9	572	333
Lanark	—	3	3	107	98
Midlothian	—	—	—	—	—
Moray	—	—	—	—	—
Nairn	—	—	—	—	—
Orkney	—	—	—	—	—
Peebles	—	—	—	—	—
Perth	—	8	8	285	225
Renfrew	—	4	4	151	101
Ross-shire	—	1	1	58	43
Roxburgh	—	—	—	—	—
Selkirk	—	—	—	—	—
Stirling	—	9	9	293	277
Sutherland	—	4	4	74	29
West Lothian	—	—	—	—	—
Wigtown	—	15	15	994	555
Zetland	—	—	—	—	—
TOTALS	—	159	159	6,814	4,297

Notes.—(1) Duration of undertakings: 1 year, 46; 2 years, 7; 3 years, 106. (2) Undertakings renewed for a further period (included in column 2 of statement): 1 year, 81; 2 years, 7; 3 years, 62. (3) Undertakings expired and not renewed (not included in column 2 of statement): 230. (4) The figures showing the number of undertakings notified during the month relate to entirely fresh undertakings.

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IMPROVING MILK SUPPLIES: LESSONS FROM NORTH AMERICA

The first of a series of reports on agriculture oversea, which the Ministry of Agriculture intends to compile, is published by the Stationery Office, price 1s. 3d., under the title "Milk in North America." It contains the findings of the British Mission to the United States and Canada last year, led by Mr. J. L. Davies, Milk Production Officer of the Ministry, to study practices which might be adopted by our own dairy industry.

The average annual yield in America is at least 100 gallons better than in Britain. This is due partly to the predominance of the Holstein breed, but the mission came to the conclusion that yields are higher mainly because the cows have been bred over many years with the one object of milk output. They recommend that long-term cattle-breeding experiments should be carried out here at one well-equipped centre associated with one of the universities, and they urge the Ministry of Agriculture to consider carefully the experience of the United States in establishing large, cheaply constructed, artificial insemination centres through which the virtues of high-yielding strains can readily be spread through commercial herds.

Emphasis is placed on the need for adequate and cheap supplies of electricity to dairy farms, good water supplies, and cheap and efficient mechanical cooling equipment. To promote quality in milk supplies, the Mission recommends payment on the basis of butter-fat content. The industry should be responsible for testing milk for keeping quality, and for providing the inspectorate to advise and assist farmers. For fresh cream and ice cream, the Ministry should take "early and urgent steps to obtain suitable legal minimum standards of compositional and hygienic quality," and "the Milk Marketing Board, and the manufacturers and distributors, should then develop the markets as soon as milk supplies are available."

Commenting editorially on the report in its issue of July 12th, *The Times* observes: "Americans and Canadians are great believers in milk. Adults as well as children take their fill, and they also consume more cream and icecream than we do. To see what could be learnt from them about the production and marketing of milk the Government sent a small party to visit the United States and Canada two years ago, and their report is published this morning. This mission of practical men paid particular attention to herd

management, cropping methods on dairy farms, organization of labour, and the equipment of dairy farms for economical production. As in this country, the basis of milk production in the United States and Canada is the family farm with up to 160 acres and an average of about 16 cows. But apart from some districts in the eastern States the dairy farmer uses mainly home-produced feeding-stuffs for his cattle. The maize crop both for silage and 'cob-corn' is a great asset, and lucerne is grown without much difficulty by farmers in the dairying States. Present necessity is forcing the British dairy farmer to grow more high-quality feed for his herd, and the mechanization of ensilage, including possibly the maize crop, is developing here as in North America. Complete self-sufficiency cannot, however, be easily attained where the stocking of farms is heavy, as it is in our dairying districts. . . . It is interesting to find that the mission strongly endorse the system of differential payments for milk on butter-fat content. They are convinced that this is desirable in order to promote quality and marketability in the milk supply. . . ."

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"NOXIOUS NOSTRUMS"

"Neither in the original White Paper on a National Health Service presented to Parliament in February, 1944, nor in the new National Health Service Bill, is there any reference to control of proprietary medicines," states *The Pharmaceutical Journal* in its issue of July 6th, and proceeds: "This omission has been the subject of one of the major criticisms by the Society of the proposed legislation. It has seemed that an impossible state of affairs would be brought about if, on the one hand, the Government were to recommend all members of the community to take advantage of the new service, and, on the other hand, proprietary medicine makers were to continue to advertise to the public on a gigantic scale which to-day is only limited by restrictions on supplies of paper. This reasoning was used by Mr. Linstead when he invited Standing Committee C, which has been considering the Health Services Bill, to add to it a new clause which would make provision for a list of medicines 'with respect to which the public are cautioned as to their use.' Such medicines, of which every chemist can provide examples, would be those without pharmacological effect, or which are offered for sale at exorbitant prices, or are advertised by claims which are false or exaggerated. He suggested that the production of this list should be in the hands of a committee consisting of persons expert in medicine and pharmacy and having experience of the proprietary medicines industry.

"It will be seen that this proposal follows the lines of earlier recommendations made by the Society for the control of medicines which are advertised directly to the public. The Society's experience in promoting legislation with this objective dates back many years, at least to 1914, when it gave evidence to the Select Committee of the House of Commons which, on August 4th of that year, reported on an investigation into the subject which it had made during the previous three years. More recently the possibilities of a 'white list' had been investigated in a collaborative effort of the Society and the British Medical Association, and one result of this investigation was the decision that even the inauguration of a limited scheme would involve the annual expenditure of a sum of money beyond the resources of either organization. It was felt, and the point has been reiterated on a number of occasions recently, that the body primarily concerned with this question is the Ministry of Health, and it is this body which should set up and maintain the organization needed.

"It is evident from his comments on Mr. Linstead's proposal that the Minister views the control of advertised 'noxious nostrums' as a matter of some urgency, indeed he said so in as many words . . . 'the time has arrived and indeed is long past when the public of this country should be entitled to be protected against the ramp that is at present going on.' However, the subject is one which concerns other ministers besides Mr. Bevan, as he himself admitted, 'it has all kinds of repercussions and is the kind of legislation which has to be very carefully considered before it is drawn up.' We are familiar with this kind of argument, but on no former occasion do we recollect hearing a Minister of Health refer to the subject of proprietary medicine control as one of great urgency. And, having seen during recent months something of the rapidity with which Government Bills pass from stage to stage on their way to the Statute Book, we should be surprised if, once a measure to control proprietary medicines was before the House, it did not speedily become law, no matter what obstacles the vested interests of the industry might attempt to put in its way."

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal views of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

Letters to the Editor should reach the Office not later than by the first post on Monday morning for insertion in following Saturday's issue.

Notice to Correspondents

The Editorial Committee regrets that, the paper supply situation having deteriorated, it has become necessary to ask correspondents again to accept a limitation on the length of letters submitted for publication. Accordingly, contributors to our Correspondence Columns are requested to note that, until further intimation is made, their communications must not exceed 350 words.

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THE DIGASTRICUS MUSCLE OF THE DOG

Sir,—We are grateful to Mr. C. W. Ottaway for his comment on our note regarding the digastricus muscle which appeared in your issue of June 29th.

In our note we recorded the constant presence, according to our observations, of a tendinous intersection in the muscle. Since we first wrote we have examined many more dogs and we are still of the same opinion. Thus we cannot agree Zietzschmann's view regarding the rare occurrence of the tendinous tissue. We find that Bijvoet, cited by Mr. Ottaway, would seem to agree completely with us since he states that among the Carnivora which he dissected the tendinous tissue was absent only in the lion and bear and that in other species, including the dog, it was always present.

With reference to Mr. Ottaway's observations on the action of the digastricus and related muscles in the dog, it is difficult to agree with his statement that the stylo-hyoideus and occipito-hyoideus are instrumental in elevating the hyoid bone, since the former muscle is so delicate and loose and would appear to be in a degenerate state. Indeed, to quote Zietzschmann: "This feeble muscle is frequently reduced in size and may then be demonstrable only as a slender tendinous band." Regarding the original function of the digastricus, we agree that the aboral portion with its associated muscles would appear to raise the hyoid bone, but we see no reason why the oral portion should not act mainly from its attachment to the jaw, in which case it also would raise the hyoid bone, instead of depressing the jaw.

Yours faithfully,

Department of Veterinary Anatomy, H. V. Hughes.
The University, Liverpool. J. W. Dransfield

July 9th, 1946.

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COLONEL H. WATKINS-PITCHFORD

Sir,—In your issue of February 3rd, 1945, which has just been brought to my notice, there appeared a letter from Colonel J. W. Rainey, written from Department of Agriculture, Animal Health Services, Devonport, Tasmania, headed "The Late Lieutenant-Colonel Watkins-Pitchford"—"Tribute to a great veterinarian." This called to mind Mark Twain's comment on a statement of his decease, when he wrote that "the report was grossly exaggerated."

I am confident that my friend Colonel Rainey will be exceedingly glad to hear that Colonel H. Watkins-Pitchford, C.M.G., to whose outstanding scientific successes Colonel Rainey, so frequently and admiringly, drew the attention of the public during his sojourn in South Africa, is not only still with us, but intensely occupied in advising regarding his method of production of hydrolized protein. This Colonel Rainey referred to, and it is now being admitted by all leading authorities on nutrition as "the most remarkable dietetic discovery of the age."

Your readers may be interested to learn that, after 25 years of neglect and political ostracism, the value of the method and the products has now been proved beyond any doubt. The hydrolized protein is being produced from beef and the meat of whales: when production is instituted on a sufficiently large scale the products will be in world-wide demand.

With this I think you will concur, if you will peruse the enclosed report of Dr. B. A. Dormer, who is the Chief Tuberculosis Officer in the Union of South Africa.*

Yours faithfully,

P.O. Box 950, Durban, Natal, G. D. Alexander.
South Africa.

May 12th, 1946.

[* We agree that Dr. Dormer's report affords striking proof of the value of Colonel Watkins-Pitchford's work on the use of hydrolized protein in severe cases of malnutrition, and would tender our sincere apologies to Colonel Watkins-Pitchford for the erroneous announcement of which this journal was the medium.—*Editor.*]